

PROFILES

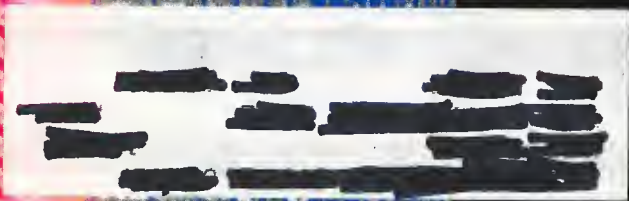


\$3.50

The Magazine for Kaypro Users
January 1986

Turbo tutorial
MS-DOS and CP/M

1985 Subject Index



HANDYMAN

TURN YOUR KAYPRO ON TO HANDYMAN!!!

AUTO DIALER

- Use your modem to make phone calls automatically without exiting the program you are already working on!!!

NOTEPAD

- Write a note, paragraph, letter, a whole file; anytime, from within any other program!!!
- Edit another file without leaving your current file!!!

CALCULATOR

- Punch up a four function calculator anytime, whenever your computer is on!!! Works in decimal, binary, hex!!! Works from within a spread sheet, or any other program!!!

APPOINTMENT CALENDAR

- Check your calendar, schedule appointments anytime your Kaypro is on!!!
- Monthly calendars 1752-2099 AD!!!

DIRECTORY

- Check the directory of any disk, any user number, from within any program!!!
- Display the contents of another file on your screen at any time!!!

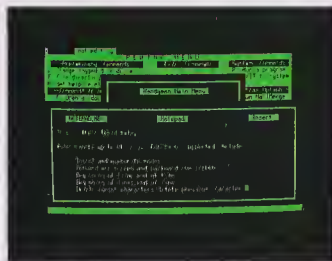
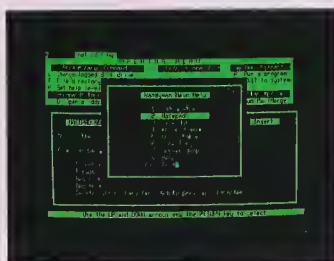
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- Dump to your printer, or to a disk file!!!

- "Disk Full" message?
With **HANDYMAN** you can check the disk directory and erase superfluous files from within any program!!!



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HANDYMAN is a plug-in board for your Kaypro!!!
HANDYMAN Works with all Kaypro CP/M models!!!
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HANDYMAN We'll talk you through it over the phone!!!

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HANDYMAN You never have to load it!
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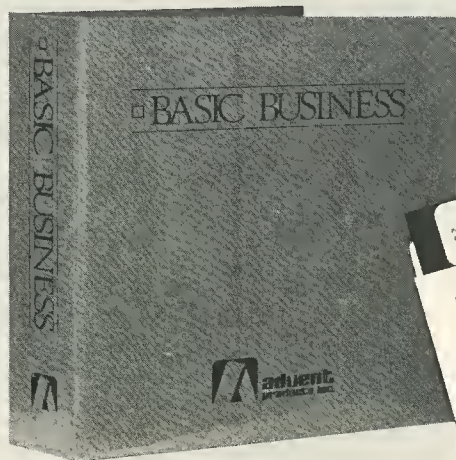
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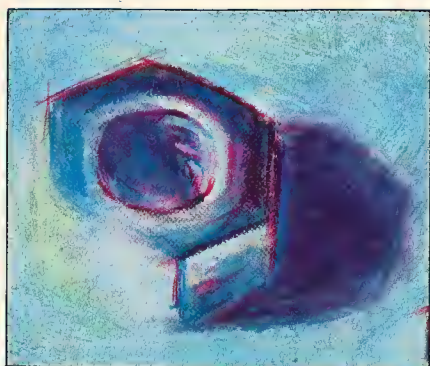
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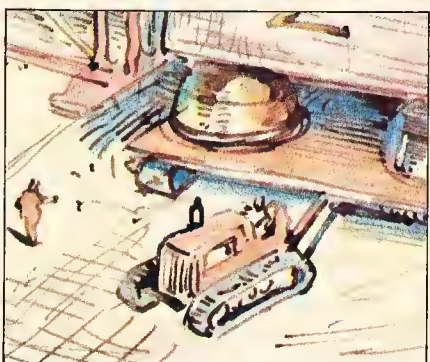
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Kaypro 200050

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On the cover: Where did MS-DOS come from? The Kaypro 2000, an MS-DOS lap-top computer, is being pulled out of a Kaypro II, an original CP/M workhorse. MS-DOS was literally derived from CP/M.

Cover photograph by R. S. Powers

Editors' Notes

You'll notice some changes in this issue of *PROFILES*. The first is that there is a January issue. In the past, we published 10 times a year, including July/August and December/January issues. From now on, we will publish 12 times a year.

Second, we are including a code at the beginning of each feature article indicating which machines it pertains to and whether it is for beginning, intermediate, advanced or general readers. An article designated "Advanced/8," for example, would be for the experienced owner of an 8-bit machine (Kaypro 1, 2, 4 or 10). An article designated "General/16" would be for all readers with MS-DOS (16-bit) machines.

Third, because *PROFILES* is "the magazine for Kaypro users," including owners of the 16, 16-2, 286i, 2000 and Kaypro PC, we are expanding our MS-DOS coverage, but we intend to maintain the coverage CP/M owners demand and deserve.

Fourth, two new items—"Tip Trader" and "Little Mysteries"—will be published as regularly as space allows. "Tip Trader" is tips readers have passed on to us in their letters. Heretofore they had gone begging for lack of a forum. "Little Mysteries," as its author David Weinberger states, will furnish those "pleasant jolts of understanding" that make computer use easier and more satisfying.

Finally, you may notice that the magazine has a somewhat different look. Columns and departments will stay the same to make them easily identifiable, but our talented art department will be "individualizing" features to make them more inviting and enjoyable to read.

We hope you like what you see.

Terian Tyre
Diane Ingalls

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Letters

Taking exception

I sincerely appreciate your including Cubbyhole in your review of small bookkeeping packages ("Automating Your Books," November 1985). However, there were two incorrect statements made concerning Cubbyhole which I would like to correct.

First, the "Checkbooks" are not an "added layer of account definition," but refer simply to a checking or other bank account, which you can define 26 of on one data disk. There is an unlimited number of accounts possible in each Checkbook, not 26 as the review stated. Perhaps the reviewers were referring to our Fund capability, which lets the user flag each transaction with one of 26 Fund codes (A-Z), so it is possible to keep track of personal and business expenses separately within one checkbook.

Second, I am not sure what was meant by "multi-level menu structure." Cubbyhole has one opening menu, and that's all. The AR and AP modules, being designed to function also as stand-alone programs, also each have one opening menu, showing all of their options. I would also like to add that we have added an open-item statement printing option to AR since the reviewed version, and that updates are available for all modules by sending the original disks back to us and \$5 per module.

Thank you again for the review and for letting me correct these items.

Alden Swan
TSK Inc.
Minot, North Dakota

I have never felt compelled to write a letter to an editor prior to this. However, the review of our accounting software (SBAccount) was so inaccurate that I feel it was either written by someone who had not even attempted to use the software or that part of the article was severely and very poorly edited.

From what is in the article, I have the feeling that the review was originally on two of our accounting programs (MBAccount and SBAccount), as both are mentioned therein, and that the article was edited way down in size.

Your readers certainly deserve articles that profess to be software reviews that are thorough and accurate because they, as I do, will base many purchase decisions on magazine reviews.

Micro-Art Programmers actually has three accounting programs: SBAccount, which is a very easy-to-use single-entry system with the capability of handling up to 99 income and 99 expense accounts; MBAccount, a double-entry system with a full general ledger (80 expense, 40 income, 40 asset, 40 liability and 20 capital accounts); and \$FINANCE, a personal accounting program that will also track charge accounts.

The article states that SBAccount can only handle 20 income and 40 expense accounts, when in fact it can handle up to 99 each. The older version of MBAccount could only handle 20 income and 40 expense accounts, but was updated quite some time ago to the figures stated above. All three of these accounting programs can handle up to nine different checking or other type of bank accounts, and all have report capabilities for year to date or for any month.

The review adds additional confusion, such as mentioning that modules are available for SBAccount, etc. These modules are available for MBAccount, or as completely stand-alone programs. They cannot integrate with SBAccount.

The last paragraph completely eludes comprehension unless it originally referred to MBAccount, as SBAccount is so easy to use and data entry so rapid that hiring a bookkeeper would be a complete waste. The main purpose of all our ac-

(continued on page 8)

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**Simon & Simon
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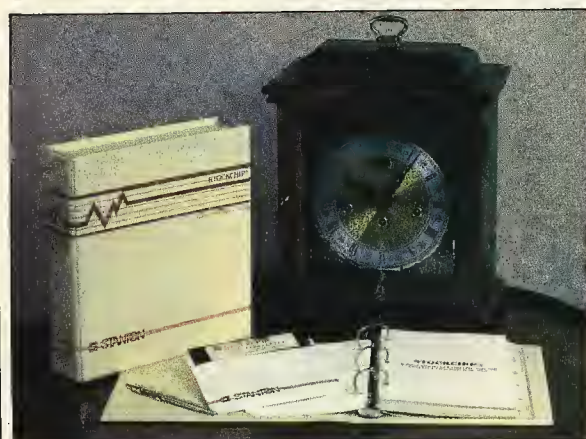
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Letters

(continued from page 6)

counting software is for quick and easy use by small businesses.

I hope this letter reaches the proper ears at **PROFILES** and that more care is given to future review articles.

Arthur L. Purcilly
Micro-Art Programmers
Cayucos, California

Reviewer Casey Cook replies:

Regarding Mr. Swan's comments, I have to apologize for the confusion in terminology. The difficulty was that in moving from one menu selection to another, we found ourselves frequently retracing steps, which the menu structure forces you to do.

In response to Mr. Purcilly, we, too, are concerned with the problem of brevity. Originally we had hoped to include more packages and a chart of 41 criteria for each package. We found, however, that we were comparing not apples to apples, but fruit to vegetables. Due to these inconsistencies, the chart was omitted.

Regarding the income and expense account questions, we used the information Micro-Art provided us as the basis of the review, and your SBAccount users' guide, dated January 1982, notes on page 6 under the question, "How many income accounts do you want?" that "You may install from one to 20 income accounts." On page 7 it notes "... you may install 40 expense accounts." It appears the information provided us is now out of date; your letter corrects the misinformation.

Can't please all people...

Lisa Fontes' letter in the November issue sent me back to September to find the number that got her goat. The merchandise she was talking about seems so harmless—which shows you never know when a gun is loaded, do you?

If your "General Store" tried to
(continued on page 12)

Q & A

by Tom Enright

We welcome and read all your letters. Letters of general interest are printed in the Letters column. Please for technical help are dealt with here, if they lend themselves to short answers, or in Technical Forum if the question is more involved.

Due to the volume, we simply can't respond to all requests for assistance. Problems requiring an immediate reply should be taken to your dealer. Kaypro Technical Support can be contacted, but be aware that they give dealers' calls priority. They are at (619) 481-3920, or write to them at P.O. Box N, Del Mar, CA, 92014. Please include a daytime phone number.

Warped characters

I'm having a problem that I hope you can help me with. It concerns my dot-matrix printer, an SCM D-100, and WordStar.

Some lower case letters with descenders (portions of a letter that print below the line) often print distorted. They always do this when one of them is the first letter on a line.

The same thing occurs when the letters are underlined. I can't tell if the problem is in the software or in my printer. I have enclosed a print sample that illustrates the distorted letters. I would appreciate any light you could shed on this.

Peter Reichelt
Flushing, New York

Your print sample does show distorted descenders. All portions of the letters except the descenders are printed correctly. Descenders in your print sample all slant to the right. I cannot imagine WordStar having this effect on printers, so I think the problem is in your printer.

If you bought the printer recently, take it back to the dealer. He will need to either clean or replace the printhead. If

you've had the printer for some time and it's just now beginning to show this problem, you'll probably have to pay to have the same thing done.

For a do-it-yourself approach, you might try a printhead cleaning kit. However, I've never used one myself so I can't vouch for them personally.

Full directory

I have a Kaypro 2X with double-sided, double-density drives. I mostly use the machine for word processing, and tend to create lots of small files. My problem is that I am allowed only 64 filenames on a diskette, so I usually run out of directory space before filling up all storage space on the diskette.

In the CP/M manual, a macro library called DISKDEF is discussed. This library is supposed to allow one to redefine the number of directory entries on a disk. The manual mentions that the library is included on all CP/M distribution diskettes. However, that library wasn't on any diskette that came with my computer.

When I asked my dealer about this he said that it was virtually impossible to change the number of directory entries. He also said that if I did manage to do so my machine wouldn't read any other Kaypro diskettes.

Is the situation really that complicated? It seems reasonable to me that I should have twice the number of filenames available than you can get on a single-sided disk.

Greg Rose
Denver, Colorado

I wouldn't recommend attempting to alter the number of directory entries allowed on a diskette. The dealer was right when he said that if you did manage to do it you wouldn't be able to read normal Kaypro diskettes.

The DISKDEF library is a hold-over from the days when users

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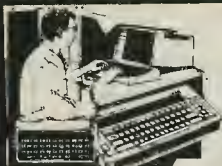
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Q & A

usually implemented CP/M on a system of their own design using 8-inch disk drives. Since it speaks to system-level programmers, as does the documentation from Digital Research, the file has been deleted from Kaypro diskettes.

What Kaypro has done on double-sided diskettes is to allow two logical file extents to occupy one physical directory entry. This allows more efficient use of the directory space with large files—not with small ones.

Have you been deleting the ".BAK" files from your diskettes? That is the best way to make more efficient use of the directory space that you have to work with.

You may also consider using a library utility to consolidate files that you don't use often. A library utility consolidates a series of files under one filename. You can then break a specific file out of the library only when you need it. A good library utility should be available from a local users' group or bulletin board system.

Microwaves revisited

I read your item in the September "Q & A" column entitled "Microwave computers" and felt I had to comment.

I am a physicist by education and a health physicist by profession (a physicist who concerns himself with matters of radiation safety). My particular area of specialty is X-rays, and as such I am the X-ray safety officer at a national laboratory and have my own business consulting with local hospitals regarding the safety of their X-ray machines.

In your article you quoted radiation levels for VDTs (video display terminals). The level of 0.0005 roentgens per hour (R/hr) is the limit imposed by federal law and is hard to miss with the proper survey equipment.

The level of 0.00012 R/hr you cited as typical for VDTs has to be at least a factor of ten [higher than

levels actually emitted]. This is a level quite easily measured and is considerably higher than possible from a monochrome VDT. If these levels are actually being measured, then the instrumentation is faulty or inappropriate, or the personnel don't know how to operate it. Natural background radiation in Solana Beach [location of Kaypro's plant] is about 0.00001 R/hr.

In my professional society's journal, *Health Physics* (Vol. 46, No. 2, February 1984, pp. 413-417, Pergamon Press Ltd.), is a definitive article on this subject. This article describes measurements made by persons who could not accept the statement that VDTs emit levels of radiation "not detectable above normal background levels." They measured VDT radiation levels with a "whole-body" counter designed to detect minute quantities of radioactive contamination in persons working with radioactive materials.

The bottom line is that 67 VDTs were measured (no Kaypros), some color but mostly monochrome. Radiation was measured from the VDT itself, but the measured levels didn't change whether the VDT was on or off!

The level of radiation measured from VDTs was then compared to levels common around us:

Cosmic radiation: 0.028 R/yr.

Terrestrial radiation: 0.026 R/yr.

Natural radiation inside the body: 0.027 R/yr.

Natural radiation dose at 50 cm from a normal adult, 2000 hr/yr: 0.0003 R/yr.

VDT, 2000 hr/yr: it's less than 0.000006 R/yr.

This kind of a detailed study should put this matter to rest, or at least in the proper perspective.

Ted De Castro
Castro Valley, California

You're right. I did misplace the decimal point—my mistake. ■■

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(continued from page 8)

become a special interests melting pot, it would soon take over the publication. I know none of us who is serious about computers wants that. *PROFILES* is too valuable just as it is. The July-August article on customizing WordStar, for example, represents not only hours and days of pleasure for me, but a major breakthrough in a printing problem I've had since the beginning. I wouldn't trade it for a solid gold bust of Carrie Chapman Catt.

Don't apologize. Your friends don't need it.

Clara T. Kingston
St. Simons Island, Georgia

Wonderful help

I am a relatively new user of the Kaypro 10. I received the November issue and I *must* thank you and John A. Morris for his article "Bookkeeping for Small Businesses."

What a truly wonderful help for a rank beginner. I sat down immediately and created the program exactly as he outlined it, and after playing with it for a short time was able to come up with exactly what I wanted for my own use.

It was a revelation, and it has given me some insight into dBASE II that I'm sure would have taken me months to find elsewhere. It's just the kind of guidance we beginners are looking for.

Betty Lockwood
San Clemente, California

Where to find Kid.Math

Linda McPherson's article ("Kids and Computers," September 1985) refers to a program called "Kid.Math" by IFP. Nowhere in the issue, I believe, is the address of IFP listed, and I cannot find it at any of the several local stores I have tried. Do you know the address of IFP?

Marc Lee Raphael
Columbus, Ohio
The address we have for IFP Publishing is 2727 Dalton Ave., Ann

Arbor, Michigan 48104.

We stand corrected

You had less than beginner's luck with your November piece ("Beginner's Luck" column) in "insuring that a signal arrives at its destination when it's due to arrive and not before."

What's the use of computerized spelling aids when a spelling can be right and wrong in the same line?

When I trained proofreaders, I used to tell them, "This is not the kind of mistake you're expected to catch; it's the kind you're expected to expect."

Leon Lukaszewski
Walnut Creek, California

We expect you're right. Of course the phrase should have read "insuring that a signal arrives at its destination when it's due and not before." The writer and the computer are innocent; we are to blame.—The editors.

The benefits of pop-ups

I really enjoyed the article on pop-ups by Ted Silveira ("Flea Market," November 1985). I am a user of Sidekick on the IBM PC at work and wished for some similar program on my Kaypro 2-84 at home. I ran across the ad for Handyman three issues ago and ordered it.

It has been installed for almost two weeks and I really like it. It was later that I saw ads for programs resident in RAM like Sidekick. I had questioned the advisability of using my limited RAM for such a program and that's why Handyman appealed to me.

There are differences between Sidekick and Handyman that become obvious at first use, but as far as I'm concerned, Handyman has given my CP/M computer a new lease on life in my household. It has made my computer much more enjoyable to work with.

Larry S. Borges
Stockton, California

Programming—ugh!

I am delighted with my Kaypro and I have found *PROFILES* very useful and helpful—but not the October 1985 issue.

Whenever I get a new issue, I can't wait to go through it, every page, to see what goodies it has for me. When I paged through the October issue, I was stunned until I read your editorial defending its content. I hope you will not continue to believe we need to do our own programming. How can personal computers become widespread if we do? How many people would be using cars today if they had to rebuild them to use them?

Any normal person can easily replace the air filter in a car, but how many do? And that job is easier than any in the October issue's six feature articles.

Do you get my point? Until we can get computers that are useful immediately and good service, preferably by the supplier, don't expect much growth in personal computing.

Do our own programming? Ugh!

C.W. Bendigo
N. Ft. Myers, Florida

Third World users

As an American with profound personal and professional interests in international development, I have found the cosmopolitan nature of *PROFILES* to be one of its most attractive features. Thus I hope you'll continue to run carefully selected articles on the uses of micros in Third World settings.

While editorial balance is always a difficult task, I hope you won't let a few readers with regrettably parochial points of view talk you out of a broader focus.

After all, one of the most inspiring results of the microcomputer revolution is that it puts enormous

(continued on page 26)

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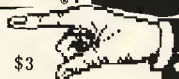
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Life at 300 Baud

Regional networks bridge the gap

by Brock N. Meeks

Correction: The Smithsonian Institute is in the process of computerizing its databases – it is not yet finished. The phone number listed in the December 1985 column connects to the Smithsonian's General Information Desk. When calling for a database search, you must specify the area or subject you're interested in and ask for the curator of that area. Curators act as a clearinghouse for all information requests. And do remember that this is a service which is provided as a courtesy to the public.

For years modem owners were caught in a classic David and Goliath scenario. Until early 1984, there were two options for micro-based telecommunications. You could log on to expensive, multi-user information utilities, such as CompuServe or The Source, or free, single-user bulletin board systems (BBSs). There was no middle ground—until now.

A new wave in online telecommunications is beginning to break on the shore. This new wave is formed by a series of online systems known as regional networks.

Standing in the gap

A regional network stands in the gap between the basement BBS and the pampered mainframe that resides in the air-conditioned environment of an information utility.

A BBS is like a commune: cramped, cozy, with limited access to limited resources.

A commercial information utility is a metropolis: crowded, often impersonal, with overwhelming resources.

A regional network is like a small Midwestern town. It has a unique identity, it's simple to travel around in, and it provides easy access to adequate resources.

In terms of online costs, too, regional networks stand between the BBS and the information utility. Typically, these networks charge low hourly rates (between \$3 and \$4 an hour, compared to as much as \$27 an hour for The Source).

Anatomy of a network

The services available on a regional network are usually community-oriented and compare favorably to the most popular services offered on information utilities.

Regional networks allow organizations to create special interest groups (SIGs). These SIGs provide forums for discussing relevant issues, databases that allow the storage and retrieval of important information, real-time computer conferencing, and a centralized meeting place.

Community businesses often sponsor databases that allow customers to interact with them, ask questions about products, and get new product updates.

State and local governments are also using regional networks to

expand their distribution of information. In Texas, on a system called The Electric Pages (TEP), the governor has his own SIG, as does the Department of Parks and Wildlife. In Colorado, on a system called Chariot, summaries of current Federal and State telecommunications legislation are online for inspection and discussion.

Regional networks run on multi-user minicomputers. The number of users a regional network can handle simultaneously (a factor of how much money the system has) ranges from 12 to 40.

A rose by any other name

The tag "regional network" is something of a misnomer. The user base of a typical system consists of callers from a single area code, making the system more like a "metro network." However, with the rise of alternative long-distance carriers like MCI and Sprint, regional networks are seeing an increase in long-distance users.

Some systems are developing intricate store-and-forward electronic mail (Email) networks. This capability allows you to dial into the closest network and send Email to someone on a system across the country, provided the system you're sending to is a member of the Email network. At a predetermined time, your regional network gathers all stored (outgoing) mail and forwards (delivers) it to the appropriate system.

(continued on page 18)

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The Kaypro manual states, "Line filtering will protect your Kaypro...from power surges or other undesirable occurrences from the power source." Surge protection will help your Kaypro provide years of trouble-free service. Also, if you plan to use your Kaypro to access information by modem, you must have a reliable high frequency noise (EMI/RFI) suppressor to insure against data loss and scrambling.

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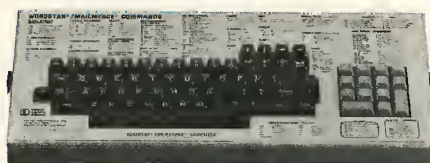
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TeleMax, D 1OL 2PJ NF	\$ 89.00	\$ 69.00

D: Connects direct to grounded wall jack.
LC: Includes 6 foot long heavy duty line cord.
S: Includes illuminated on/off switch.
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PJ: Includes 2 phone jack receptacles.
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"Spikes and surges can be the greatest threat to your computer outside a 4 year old child with a jelly sandwich aimed for the disk drive slot."



Photo:
Panamax
6 outlets LC S RB NF.

"Power line-associated problems are estimated to cause nearly 70 to 90 percent of the malfunctions in the IBM PC."

"Overvoltage can be fatal to both data and hardware alike."
P.C. Magazine, March 1983

Lockable Diskette Defender

Handsome, sturdy, smoke-tinted acrylic tray holds 70 Kaypro-size diskettes. Flip-up lid keeps out dust, debris, and moisture, and locks securely to guard your important work. Comes with 7 dividers that make for easy filing and keep floppies upright to prevent bending, warping, and scratching. Tough metal lock never comes in contact with diskettes because it is enclosed in a plastic housing. Super value at \$23 for one, or \$21 each if you buy 2 or more. Keep prying eyes and sticky fingers away from your important data. Order today.

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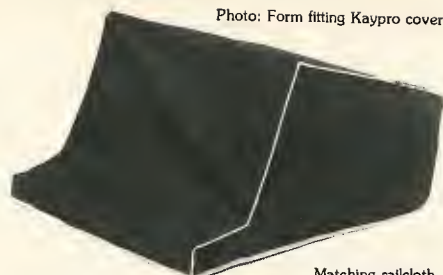


Photo: Form fitting Kaypro cover.

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Central's super priced **\$45 SmartKey II Plus** combo pak includes a free copy of *SmartPrint II Plus*, a program that greatly enhances the operation of dot matrix printers, and a free copy of Paul Golding's \$15.95 book, *Screen Smarts, The Computer Tamer's Guide*. This book tells how you can use *SmartKey* to turn your computer into a supercharged mean machine. Save time and money. Order today to get this hard hitting \$95 software and book combo for only \$45. 30 Day Moneyback Guarantee. Test drive it.

Attention: Sorry XtraKey. XtraKey users who want to see definite power, turn in your master disk. Get a \$10 credit.

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Input for a *SuperFile* database comes from your word processor, so you can easily include information you already have into a database without having to re-key it. No fancy fields to define. This is a completely free-form database system. No programming language to learn. There's nothing difficult here. You can be up and running within minutes. *SuperFile* uses logical searching procedures to find your information fast. *SuperFile* searches from 60 to 400 entries per second. Save yourself the time and effort of filing and cross-filing information by hand or in overly structured data fields. *SuperFile* lists at \$195. Central's price is \$145. Order today to get *SuperFile* fast.

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Don't let *FontStar*'s low price fool you. It's a powerful program. Although it's not as versatile as *Fancy Font*, it really brightens up plain jane dot matrix printing and for much less too. Works with Epson FX, RX, MX, and LQ1500 printers. Also works with Epson compatibles like Gemini printers too. Gives same results. Impressive. Good looking reports, letters, invitations, announcements, etc.

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Flash Bold
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Wordstar	software. Fast results.	\$ 75.00 \$ 57.00
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all ★ products and Random House Checker		
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CP/M 2.2E only	\$ 32.00	\$ 29.00
Date Stamper	\$ 39.00	\$ 34.00
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 — RAM disk. Add PC DOS : MSDOS computer

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3M Head Cleaning Kit	\$ 32.00	\$ 21.95

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Kaypro WP Plain & Simple	\$ 13.95	\$ 12.50
Using CP/M on Kaypro 10	\$ 19.50	\$ 18.00
Screen Smarts, Tamer's Guide	\$ 15.95	\$ 12.95

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Punctuation and Style makes writing and rewriting much easier. The list price of *Punctuation and Style* is \$125. Central's price is \$95. Experience the power of this valuable "Punctuation Checking and Writing Improvement Software" yourself. Order today to get this program fast.

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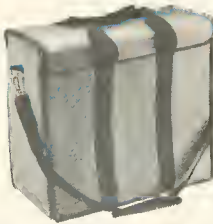
Word Finder was compiled by a team of lexicographers. It is extremely fast and works within Wordstar, so you never have to leave your file to use it. Just put your cursor on a word in your text, press the escape key twice, and a list of synonyms appears. Then press a key if you want to select and automatically place an alternate word in your onscreen text. *Word Finder* will help you find the exact word you need to properly express your thought. *Word Finder* retails at \$124. Central's current low introductory price is **\$69**. This offer may not be repeated. Please order today.

Attention: *Word Finder* works with all Kaypros. Gives Wordstar text files new vim, vigor, and punch.

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The Coverman Kaypro case comes fully padded and lined, so your Kaypro is protected from unexpected bumps and jolts. Since your Kaypro is completely enclosed in this case, it keeps rain, sand, and other debris out of your machine. The Coverman case comes with external carrying handles and a detachable strap with a non-slip shoulder pad that comes in handy when you have to carry your Kaypro over a long distance. There is also a large interior pocket perfect for transporting manuals and diskettes. The Coverman Kaypro carrying case is regularly \$79.95. Central is proud to offer this expertly constructed case at \$59.95. Please indicate your choice of color: silver-gray, dark blue, or brown. All straps and carrying handles are black. You must be completely satisfied with your purchase of this handsome travel case or receive a refund immediately. Order today.



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This stand is made from rounded, steel rods covered with a thick, shiny, soft, black polymer material that protects your Kaypro and table top from scratches. Unlike flat wood or acrylic panels used in other stands, the tough supporting rods of the Smart Stand (TM) do not obstruct air flow. In fact, since your Kaypro is lifted off the table top and gently angled by this stand, air rises up from under your computer, and flows freely through it to help keep it cool. When you're finished computing, you can slide the keyboard completely under the stand to create a working area on your desk. The Smart Stand is a super value at \$34.95. Try it for 15 days. If not completely satisfied, send it back for a full refund. Matching 80 or 132 column printer stands are only \$19.95 or \$23.95. Order today to get the Smart Stand fast.

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Visa and Mastercard phone orders accepted. **Call toll free**

To order by mail use coupon, letter, or photo copy. Thank you.

Pocketbook department

Though regional networks provide capabilities far beyond those of simple BBSs, many users are reluctant to pay for them.

David Hughes, co-founder of the Chariot system, says: "We've created a generation of welfare modem users. Bulletin boards have made people accustomed to free online communication systems. I think modem users have come to believe free online communications are a right, instead of a privilege."

To soften the reluctance of users to pay for online access, some systems provide a free line into the

network. This free line allows the user limited access to several of the network's databases and discussions. This way a user can check out what is available on the system without spending any money. These free lines are really a public service because they allow those who can't afford the expense to participate, at least to some degree.

The cost of evolution

Although the evolution of regional networks is encouraging, a big factor standing in the way of a mass-market breakthrough for

telecommunications has been cost. An online system in any form larger than a BBS has, up to now, cost "serious money"—somewhere in the \$75,000 range.

With drastic price cuts in computer products, however—for everything from modems to mainframes—a regional network can now be started for about \$15,000. At first blush that seems like a lot of money, but consider that a regional network can compete with CompuServe in areas like response time, ease of use, cost, and communications capability, and \$15,000 doesn't seem like so much.

Now that it is possible to set up a commercial network without a Fortune 500 credit line, the online community may be about to experience an entrepreneurial push such as the one that drove the microcomputer industry in the early 1980s.

The players

Here is a *brief* look at the current lineup of pioneering regional networks. All the networks run 24 hours a day and operate at either 300 or 1200 baud.

Network name: Chariot

Location: Colorado

Phone number: (303) 632-4111

Log-on: New users can sign up online. MasterCard or VISA billing available.

Chariot contains a unique conference on the North American Presentation Language Protocol Syntax (NAPLPS). This is the standard used in all North American videotex systems. This is the only public system in the nation that supports NAPLPS. With the right software (which you can order online) users can swap videotex pictures back and forth.

Chariot is one of four systems linked in a store-and-forward Email network. A free line is available to check out the system. Call (303) 632-3391.

Network name: The Electric Pages
Location: Texas

Extra Desk

the all-software pop-up desktop for Kaypro computers

EXTRA DESK is the integrated desktop system designed to run on all Kaypro CP/M-80 computers.

With **EXTRA DESK** running, your Kaypro can replace many of those items that take up valuable space on your desk. Just check out the list of functions to the right.

EXTRA DESK is all software (no extra hardware to complicate your system). A single command installs **EXTRA DESK** into your system. Installation can even be performed from a submit file (great for turnkey applications).

EXTRA DESK's menu stays 'hidden' in your computer's memory, always ready for action. You can 'pop' out of the middle of just about any program to use **EXTRA DESK**. And when done, **EXTRA DESK** restores your original program, ready to continue, exactly as you left it!

EXTRA DESK even has built-in help so you don't have to clutter your desk with a manual.

Best of all is the price - **\$49.95**

Features include:

4-function 14-digit calculator with memory and printed audit tape (tape can even be copied into **EXTRA DESK's** clipboard)

Perpetual calendar (can be copied to the clipboard)

Clipboard that can grab, edit, dump, and transfer a live screen of text (also used to create up to ten 40-character key macros)

Disk and file commands just like those built into CP/M

Multi-page notepad to edit, print, and save whatever you please (also move text to and from the clipboard)

Phone directory with automatic entry sorting and dialer (requires Kaypro internal modem)

Reference data file for easy access to often-needed information (comes with WordStar info and ASCII table, and can be expanded)

Yes, please send me a copy of **EXTRA DESK** for \$49.95 (includes shipping)

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Name: _____

Address: _____

City: _____ State: _____ Zip: _____

POINT DATA PRODUCTS, 6065 Mission Gorge Road, #403, San Diego, CA 92120

(619) 287-2052

Phone number: (512) 472-6028
Log-on: Enter: "free." This gets you into the system and allows you to sign up online. MasterCard or VISA billing available.

This is the oldest regional network. It has 600 megs of online storage and is heavily used by the Texas educational system.

TEP users can reduce their online costs by creating various publications. Authors of TEP electronic publications are paid a royalty for every minute someone reads their work online. TEP's motto is "The marketplace for creative people."

A free line to TEP is available. Call (512) 472-6028.

Network name: The Whole Earth 'Electronic Link (WELL)

Location: California

Phone number: (415) 332-6106

Log-on: ID and password issued if you sign up online. MasterCard and VISA billing available.

This system is owned and operated by the people who publish the *Whole Earth Review*. Based in the San Francisco Bay Area, this system has a user base that draws heavily from the Silicon Valley.

Conferences are available on topics from telecommunications law to games (and this is where some of the nation's heavyweight game designers hang out). The WELL is another system in the store-and-forward Email network.

Network name: ArborNet

Location: Michigan

Phone number: (313) 663-6400

Log-on: ID and password issued if you sign up online. MasterCard and VISA billing available.

Sponsored by Network Technologies, Inc., this system operates as a non-profit venture. It carries discussion on local government and social issues. Local businesses and organizations use the system for feedback from the public. It is also a member of the store-and-forward Email network.

Network name: M-Net

XtraKey out "keys" the competition. Here's why!

"XtraKey is the best single purchase I have made for my computer." E.M.S., Mt. Rainier, MD

There's no question about it. The things that XtraKey can do through key redefinition just plain make your computer a whole lot easier and faster to use.

Things like reducing long and complicated command sequences or repetitive typing to one or two keystrokes. Bolierplate. Macros. Changing keyboard layouts. SmartKey II Plus can do this too, but that's about it. With XtraKey, you get so much more.

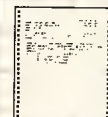
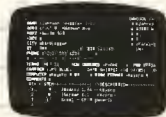
Our comparison chart lists just a few of XtraKey's features. We could have included XtraKey's built-in screen dump to printer function, typewriter mode, caps lock function, printer on/off feature, printer output to screen redirection, or built-in menu. But we didn't. After all, things are one-sided enough.

XtraKey is easy-to-use and comes with a 90-page manual and quick reference card. **Now only \$39.95.**

FEATURES	XtraKey	SmartKey II Plus
Keys may be redefined even while running another program ("on-the-fly").	YES	YES
Mistakes made while entering a definition can be corrected without having to reenter.	YES	NO
All keys, including numeric keypad and cursor keys, can be directly redefined.	YES	NO
Number of extra definition sets ("shifted") that can be used at any one time.	7	1
Maximum number of characters per definition or all definitions combined.	NO LIMIT	3,838
Bytes of memory required per 500 bytes of definition data.	500	1,000
Definitions can be sent to printer, CRT, or punch device (in any combination).	YES	NO
Definitions can "chain to" or activate other definitions.	YES	NO
Automatic definition file loading.	YES	NO
Disk space required in minimum configuration to use and save definitions.	7K	24K

SmartKey II Plus is a trademark of Software Research Technologies, Inc.

XScreen



OR



"It works and it's solid . . . well worth it . . ." Tom Enright, Technical Editor, Profiles

XScreen is the clever program that can make instant copies of your Kaypro's current screen display on your printer OR save screen copies to disk in standard word processing text files. Works any time, even while running your favorite programs. Print out menus, addresses, spreadsheet totals, E-mail messages, etc. or save to disk and use your word processor to enter them into a report or a letter. XScreen is easy-to-use and requires no installation. **Now only \$19.95.**

NEW!

XtraTech

The Xperts' new system examination tool does things your mother or DDT never taught you. There's save console output to file; memory search, substitution and type; direct I/O; display parameters; screen restore and more.

What's remarkable is that XtraTech allows your system and other programs to run normally, yet you have access to XT's features at any time. (For example, you could patch WordStar while it's running and see the effects of your patches immediately.)

XtraTech is menu-driven and requires no installation! **Only \$19.95.**

NEW!

Side2

Until now, CP/M users wanting to print out extra-wide spreadsheets or reports could only twiddle their thumbs and watch while MS-DOS'ers were using a nifty program that turns everything "sideways". Twiddle no longer . . . Side2 for CP/M is here. No more gluing or taping. Take that 25-year 200-column monster financial plan and print it down your paper instead of across. **Only \$24.95.**

Side2 requires an Epson, Gemini, Okidata or compatible dot-matrix graphics printer. Other printers being added, contact Xpert Software for information. Side2 works with any program producing text file output including Perfect Calc, dBase II, CalcStar, WordStar etc.

ORDERING INFORMATION

All programs will run on ALL CP/M (8-bit) Kaypros. To order, send check or money order for program(s) plus \$3.00 shipping in U.S. and Canada. California residents MUST add 6% sales tax. **SPECIAL OFFER** — Order XtraKey and get XtraTech, XScreen or Side2 for only \$10.00 each. Specify computer model and disk format (single or double sided). VISA and MasterCard accepted (provide card number and expiration date). All orders please include telephone number.

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Location: Michigan

Phone number: (313) 994-6333

Log-on: ID and password issued. This is a free system.

This system is run on an Altos computer in the sysop's apartment. Located in a college town, its user base is primarily college age. Discussions center on current events on the national and international scene.

This system is the prototype for Chariot and ArborNet. M-Net is a member of the Email network.

Network name: Real Estate Information Network (REIN)

Location: New York

Phone number: (for information only) (914) 358-2335.

This system started out to be just an information database containing multiple listings for real estate and mortgage brokers. It is now much more. There is a shop-at-home section, an electronic publications database, and an option called the "Midnight Hackers Special," where a small monthly fee allows users unlimited online time during off hours.

Predictions

Will regional networks replace the large, national information utilities? It's too soon to tell, but it's likely they will for some users.

There are those who feel that CompuServe and The Source, like other bureaucratic organizations, are slow to respond to customer wants and needs (like upgrading software or instituting new services).

A regional network tends to be designed around the wants and needs of its user base. Because a regional network can customize its services to satisfy its users, we could see fair numbers of users heading for community-oriented regional networks.

These regional networks could become a haven for information utility refugees and a "home base" for thousands just discovering the ("Gee, a modem for Christmas!") wonder of telecommunications. ■



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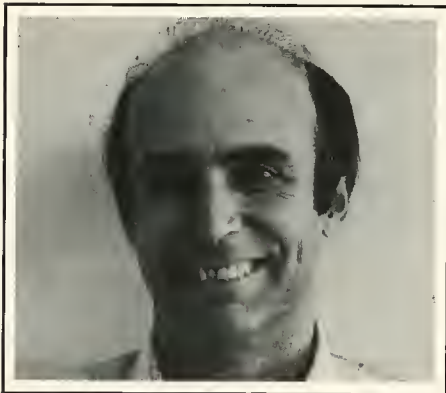
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Flea Market

CP/M: Peak performance is the bottom line

by Ted Silveira

With 16-bit IBM-compatible MS-DOS computers getting so much attention lately, some CP/M users are beginning to feel as insecure as a plow mule at the Kentucky Derby.

After all, with an MS-DOS machine you can get 640K or more of RAM, famous software that won't run on CP/M computers, and slots that virtually guarantee you will always be able to add the latest hardware to your computer.

So why stick with an 8-bit CP/M Kaypro? I'm sure you've heard some of the reasons—you don't have to learn to use a new computer, new operating system, and new software; you don't have to worry about transferring all your valuable data from CP/M to MS-DOS. But there's another reason that most people still overlook—performance.

A tale of two computers

Think about the following facts. In the July/August 1985 issue, *PROFILES*' technical editor Thomas Enright ran some speed tests in his review of the Kaypro 286i. Among the computers tested were a Kaypro 4 (your basic CP/M computer with two floppy disk drives) and an IBM XT (using only the floppy disk, not the hard disk).

In a shell sort of 5,000 elements, the Kaypro 4 took 34.35 seconds; the IBM 41.18 seconds. To write 23 lines of 75 characters to the screen 100 times, the Kaypro 4 took 1

minute, 52.60 seconds; the IBM 4 minutes, 7.17 seconds (those IBM screens are s-l-o-w). And to write 3,000 82-byte records to the disk, the Kaypro 4 took 3 minutes, 58.43 seconds; the IBM 3 minutes, 26.88 seconds.

In his *Advanced dBASE II User's Guide*, Adam Green ran four dBASE II speed tests involving sorting, indexing, and displaying mailing lists of 100, 500, and 1,000 names using a floppy-disk Kaypro 2 and a hard-disk IBM XT. The Kaypro came out on top every time.

How could a floppy-disk Kaypro be so much faster than a hard-disk IBM? Looking back at Enright's test results, I can only conclude it's because 1) the Kaypro is a little faster than the IBM in internal processing; 2) the Kaypro is *much* faster than the IBM in displaying things on the screen; 3) the IBM

puter's performance by its technical specifications, but only by the amount of work you can get out of it. Of course, there are special cases—the people who must create huge spreadsheets using Lotus 1-2-3 will have to have IBM clones. But for most of us, all that matters is getting the most work done in the least time with the least effort.

Improve the operator

The biggest bottleneck in computer performance is the computer operator. In many cases, your computer spends more time waiting for you to tell it what to do than actually doing it. You can speed things up by investing some time in learning to use what you've already got.

Learn to touch-type, as Sarah Wernick suggested in her review of touch typing programs ("The Ulti-

You can't judge a computer's performance by its technical specifications.

hard disk is only a little faster than the Kaypro floppy disk. It's also possible that the CP/M version of dBASE II is more efficient than the MS-DOS version.

What does it all mean?

On the surface, it suggests that if you want to use dBASE II, you're better off with a Kaypro than an IBM. More significantly, I think it means that you can't judge a com-

mate Computer Speed-Up," in September 1985), and study your software to learn its secrets. A sophisticated user on a slow computer will always out-perform an ordinary user on a fast one. By reading and experimenting you'll discover that you can bang in several WordStar commands without waiting for the first one to finish, and that a dBASE II "COPY... WHILE" command runs about ten times as

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PROFILES Magazine April 1985

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The right software. Make sure your main software packages are up to their jobs. Perfect Filer and DataStar are good enough for list management, but for heavy-duty databases, you need dBASE II. Likewise, both Perfect Calc and CalcStar are just fine for light spreadsheets, but for serious financial work you should probably get SuperCalc 2 or MultiPlan. WordStar is probably the best all-around CP/M word processor, but if you really crave speed you can try either WRITE or Vedit Plus.

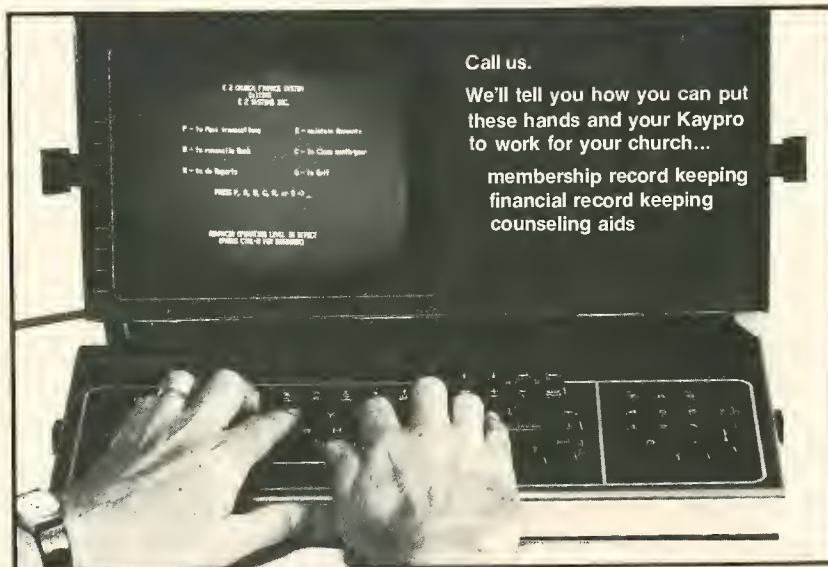
Key definition programs. Get a key definition program—XtraKey, Smartkey II, MagiKey—and learn how to use it. By reducing a complicated series of commands to one or two keystrokes, these can supercharge any software. Most are cheap (around \$50), and once you have one, you'll never give it up.

The Z-System. Install the Z-System (ZCPR3 and its companions) on your computer. As an operating system, the Z-System makes MS-DOS look old and cranky. It does for your whole computer what a key definition program does for a program like WordStar—letting you automate and integrate your work as never before (see articles on the Z-System this month and last for a sample). And the price is right—anywhere from zero to \$160, depending on how much work you are willing to do and how good your public domain resources are.

Improve the hardware

Speed-up kits. If you have an old ('83 model) Kaypro, you can upgrade its clock speed (the speed at which its main processing chip runs) from 2.5 MHz to 5 MHz through a very simple modification involving a couple of wires and a new chip. You'll find information on this speedup modification in back issues of *Micro Cornucopia* (a good technical magazine—see their ad in any *PROFILES*). If you're nervous about taking a soldering iron

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to your Kaypro and can't find anyone to do it for you, you can get commercial speedup kits.

Improved ROMs. Whether you have an old or new Kaypro, get a new ROM (read-only memory) chip. These new chips speed up your disk reads and writes, give you faster screen displays on most new Kaypros, and let you run up to four floppy disk drives (including the 790K quad-density drives). The chips sell for \$60-\$80.

Hard disks. Add a hard disk. As Kaypro 10 owners know, hard disks store much more information than floppies, usually at least 10 megabytes (10,000K), and transfer it to and from your computer more quickly (if they are properly installed—it's possible to make a hard disk work as slowly as a floppy). This can dramatically improve the performance of programs that use the disk a lot (like WordStar). You can get an add-on kit with a 10-megabyte hard disk for your Kaypro starting at about \$1,000. (See "Adding a Hard Disk," October 1985.)

RAM disks. Add a RAM disk. A RAM disk is a hardware attachment full of memory chips that your computer thinks is an ordinary disk drive. The RAM disk is very fast, faster than a hard disk. Its disadvantage is that all information on a RAM disk is lost when you turn off the power—you must save all important information onto a real disk before you quit. RAM disks may hold anywhere from 256K to 1 megabyte (1,000K). Prices start around \$300 if you add your own memory chips.

How do you choose between a hard disk and a RAM disk? Here's a crude rule of thumb. If you find yourself constantly running out of disk space, or if you usually swap disks a number of times during a work session, go for the hard disk. If you don't swap disks very often or if speed is more important than anything else, go for the RAM disk. Ideally, you'll get both.

Printer buffers. Get a printer buffer. These devices are placed

between your computer and your printer. They receive a file from your computer as fast as it can send it, store the file, and then feed it to the printer as fast as it can print. Instead of tying up your computer for half an hour while a file prints, you can dump the file to the buffer in a few minutes and then go on to run another program. Some buffers can also print multiple copies.

If you added everything I've men-

tioned to your Kaypro, you'd have a fire-breather; but that's not exactly the point. The point is to get the most useful work out of your computer for the least effort. If you feel you need more performance, that you're working too hard for too little result, don't assume that the answer is an IBM clone. In many cases, you'll get better performance for less money by tapping the CP/M Kaypro's hidden power. ■ ■



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All the type in this ad was printed on an inexpensive dot matrix printer with Fancy Font, the program that works with almost any word processor to produce high resolution, proportionally spaced, letter quality printing.

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Fonts, including Roman, Sans Serif, Bold, *Italic*, *Script*, *Old English* and more, from 8 to 24 points come standard with Fancy Font.

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Kaypro Users' Groups

Learning to operate a computer isn't easy—everyone needs help at one time or another. This precisely the reason users' groups were born.

Basically, a users' group is a collection of computer owners and users who learn from each other. These are non-profit membership organizations devoted to making life with a computer easier.

Kaypro Users' Groups (KUGs) exist in every state, in Canada, and in countries all over the world. There are two groups in France, one in Belgium, one in Germany, plus others in Finland, Switzerland, Saudi Arabia, and Australia.

All officially recognized KUGs are recorded in a database. These groups receive periodic informational mailings and have access to KUG support programs offered by the corporation.

Official KUGs will also receive ONKUG The Official Newsdiskette of Kaypro Users' Groups, compiled by Kaypro Corporation.

Finding your KUG

To find the KUG closest to you, write to the KUG Manager at Kaypro Corporation and include your home address, state, and zip code. He will send you a list of KUGs in your immediate area.

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Jim Durkin, KUG Manager
 Kaypro Corporation
 533 Stevens Avenue
 Solana Beach, CA 92075.

Or call his BBS at (619) 2594437, 300/1200 baud. Logon as a "new-user," or leave message for sysop, to apply for a password. □

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Some back issues of *PROFILES* are available. Highlights of recent issues are detailed below. We'll send you the desired issue(s) for \$4.00 each, including postage and handling. Enclose your name and address along with a check or money order payable to Kaypro Corp. and mail to:

PROFILES

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- Statistical software roundup

April '85

- Famous users
- dBASE and the real-time clock
- Tax prep software

May '85

- Alvin Toffler interview
- MBASIC marvels
- Telecommuting

June '85

- Micros in the Third World
- Perfect Series ver. 2.0 review
- Tracking the "desaparecidos"

July/August '85

- \$100,000 a year freelancing
- Customizing WordStar
- Hardware review of 286i

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- CP/M educational software
- DU (Disk Utility), part 1
- Disk drive diagnostics

October '85

- MBASIC to Turbo
- Sorting algorithms
- C programming language

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—David Obregon, *PC Magazine*

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(continued from page 12)

power in the hands of people who haven't had it before, not only in affluent industrialized countries but elsewhere as well.

Bruce Herrick
Lexington, Virginia

Just a note to let you know that I appreciate the mix *PROFILES* provides. Third World use of Kaypros was excellent, as were the Buckley and Toffler interviews.

I live in Dodoma, Tanzania. My Kaypro 2 is mainly used in word processing, but also I've been working on a Maasai-to-English dictionary. I've also published a book with my Kaypro as the typesetter.

Doug Priest, Jr.
Dodoma, Tanzania

Beyond the call of duty

We recently had occasion to purchase two different proportional spacing programs for use with our Kaypro 2 ('83). Both were purchased after we saw the respective ads in *PROFILES*.

We have a Xerox 620C Memorywriter that we wanted to use in conjunction with our Kaypro to print out the manuscript of our book. Both programs' developers assured us that their particular program could be installed for the Memorywriter.

Alas, such was not the case. Apparently Kaypros and Memorywriters simply do not speak the same language. Support we received from the outfit that sold us the first program was minimal. We eventually gave up and wrote off another bad investment.

However, the second program, PropStar by Civil Computing Corporation, was a different story. First, the president of that corporation, Mr. Russ Greenlaw, put in many hours talking to Xerox and Diablo representatives to see if there was *any* way our Memo-

rywriter could be made to work with PropStar.

Since we were up against a publishing deadline and couldn't use the program as it was, he offered to use his own Diablo printer to print out one or more rough drafts and, if necessary, the final draft of our manuscript at no additional charge to us.

When it became apparent that there was no way our Memorywriter was going to be able to work with PropStar, and when his own work backed up to the point where he couldn't continue to do our printouts, he loaned us one of his own Diablo 620 printers to finish printing out the manuscript.

Unfortunately, the printer had an electrical problem that caused it to overheat and shut down the first time we tried to use it. No problem—Mr. Greenlaw *personally flew in with a replacement and installed it right at our office.*

Throughout our association with Civil Computing, Mr. Greenlaw was always available by telephone to answer all of our endless questions and to try to talk us through procedures.

I wanted to share our experience with your readers, since I'm sure many readers may have considered purchasing a proportional spacing program for their own use. We cannot say enough good things about PropStar, Civil Computing Corp., or especially Russ Greenlaw, who truly came to our rescue in our hour of despair.

Lise A. Young
Attorneys' Medical Reference
Paradise, California

All letters to the editor should be mailed to:

PROFILES
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533 Stevens Avenue
Solana Beach, CA 92075.

CPI User Comments

CPI BUSINESS SYSTEMS USERS HAVE SENT US 100s OF LETTERS, MANY WITH SUGGESTIONS FOR IMPROVEMENTS, BUT EVEN MORE JUST TO LET US KNOW THEY LIKE OUR PRODUCTS. WE AT CPI FIRMLY BELIEVE THAT OUR SOFTWARE CAN ONLY REMAIN THE BEST WHEN WE LISTEN TO YOU, OUR USERS, SO WE CONTINUE TO ENHANCE ALL APPLICATIONS BASED ON YOUR INPUT. THIS POLICY RESULTS IN LOTS OF LETTERS LIKE THESE...

I am extremely pleased with the program. The manual which accompanied it is complete and clearly written, and the program itself is a pleasure to work with. . . (TLF)

I have personally been involved with data processing for the past ten years as head of operations for (company name). Never before have I talked with any software support technician who was as polite, courteous, and intelligent and most of all, knowledgeable of the system which was being discussed. . . I commend you, your software and most especially your personnel. . . (HRH)

. . . I have found your general ledger system to be far superior to any I had worked with previously. Your program makes my work so much easier and efficient that it is truly hard to explain. . . (PAW)

We have sold several of your packages & find that the end user is always surprised and pleased with the value & software. . . (CS - Dealer)

I wanted to express my appreciation for the simplicity and many hours of detail thoughts that went into your programs to make them understandable to the average layman. At this point you have one very satisfied customer. . . (JC)

I sincerely appreciate the super service. . . (DFP)

Your documentation and instructions are much clearer than with *. . . (SDF)

I have tried three different payroll programs but yours is by far the best. It is user friendly and has good documentation. . . (JAR)

GREAT PROGRAMS!. . . (SLL/BKE)

I am amazed at the quality of your program—especially at this price. Thank you. . . (PAW)

I am well satisfied. . . (RC)

This software has the best written support documentation I have seen in three years. . . (JCJ)

Truely astounding program for the money. Super job, we need more software companies like you. . . (DWT)

You have * backed off the map. . . (WFR)

Installation was painless. . . (GAP)

I really appreciate the sample data files and tutorial. . . (TRA)

THANKS ONE AND ALL. WE'LL DO OUR BEST TO KEEP THOSE CARDS AND LETTERS COMING!

* Indicates other supplier's systems. All letters on file, copies on request.

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We know that floppy disk users don't appreciate shuffling four or five disks in and out per application. We know that no users like to abort in the middle of an application to change printer pitch. We know that users don't like copy protection and complex licensing agreements. We don't believe that any systems with these 'features' can be considered easy to use so we left them all out of CPI Business Systems.

Fancy packaging and expensive type set manuals add greatly to the cost of most application packages but have little lasting value. Once your system/s are up and running for a week or so their real worth is their day-to-day productivity and responsiveness; the other materials gather dust. CPI Business Systems include **comprehensive manuals, sample data files, tutorial sessions, etc.—everything you need is included.** Our manuals are prepared and printed on computer systems.

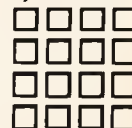
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CAPACITIES - 600/2000 emp. (CP/M/MSDOS), 98 Tax File Rcds.

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MS-DOS: 128K (or more) & MS-DOS/PC-DOS 2.0 or higher - ANSI.SYS.
Printer: 132 columns (compressed pitch supported), continuous forms.
Disk/s: Dual Floppies/Hard Disk/Both - 191K recommended, less works.
CRT: 80/24 with Clear, Home, Clear to EOL, Up, Down, Left, Right.

CURRENT UPDATE:

THE C.P.I. GENERAL LEDGER SYSTEM WAS REVIEWED IN THE NOVEMBER 1985 ISSUE OF PROFILES (STARTS ON PAGE 49). HERE ARE SOME OF THE BETTER QUOTES FROM PAGE 50, BUT BE SURE TO READ THE WHOLE REVIEW. "THIS TOP LEVEL PACKAGE RATES AS ONE OF THE BEST PROGRAMS WE REVIEWED. . . COMPARES FAVORABLY TO PACKAGES COSTING HUNDREDS OF DOLLARS MORE. . . FEATURES OFFERED BY THE C.P.I. SYSTEM MAKE IT EXTREMELY POWERFUL AND FLEXIBLE. . . THE DOCUMENTATION IS EXCELLENT. . . USER SUPPORT PROGRAM INDICATES A HIGHER THAN AVERAGE INTEREST IN USER SATISFACTION."

Pretty Pascal

A tutorial that illustrates Turbo's power and beauty

by Edward Gelerinter

Last Father's Day my kids gave me a copy of Turbo Pascal for my Kaypro II. After spending some time with my nose in its manual, I was ready to write a few simple programs. As my skills increased, I found myself writing more of my programs in Pascal and fewer in BASIC. I also found myself spending most of my free time practicing my newly developed Pascal skills. After all, Pascal is a logical, structured, even elegant, language. To me, an elegant language is a pretty language. I have heard programmers refer to languages as being pretty, but I didn't really understand what they meant until I learned Pascal.

In the eye of the beholder

The best way to illustrate the simple elegance of Pascal is to present well-chosen programs that use some of the more powerful properties of the language. But first, let's review the major points about Pascal. (For more detail, see the review of Turbo Pascal in the July/August 1984 PROFILES.)

Unlike BASIC, Pascal has a definite structure, which will be described in some detail as I present specific programs. This structure encourages good programming practices. It allows you to write the program in small, individual modules called "procedures" and "functions," which perform particular tasks. Usually, each module can be written and tested individually. Then the pieces can be put together to form a program.

Once a program is written, Pascal produces an executable .COM file that is run simply by typing in the name of that file. This means you can give copies of your work to friends, who won't need anything else to

run it. Pascal also requires you to declare all variables in advance. This discourages adding afterthoughts to the program.

Typically, a compiled language like Pascal makes those who are used to working in a non-compiled language such as BASIC impatient. When you type an incorrect line in BASIC, often an error message pops up immediately. In a compiled language, the errors don't show up until you try to compile the program—then you get a bunch of them. Turbo provides a useful compromise. If an error is found, the compilation stops, and the error is noted. Even better, you are returned to the editor with the cursor pointing to the place where the error was detected.

Turbo programs compile extremely fast. Your patience during the writing is rewarded with a program that takes much less time to execute than a corresponding BASIC program.

The game plan

Now on to the programs. I intend to present a Turbo Pascal program that will accept filenames from the keyboard, or read filenames from a disk file. The program will write out a concatenation (a linked series) of the contents of the files either to the printer or the disk. I will call this program WRITER. Of course, it must be relatively easy to create the file containing the group of filenames if WRITER is to be useful. Another Turbo program, GROUPER, is designed to do just this. As you will see, GROUPER is a short program that taps some of the powers of the CP/M operating system. Take a gander at Listing 1: Grouper. This is a moderately sophisticated program that demonstrates some of the power of

LISTING 1: GROUPER

```

PROGRAM grouper:

PROCEDURE cat;
VAR out:text;
    a, b, bb, counter:integer;
    filout,name:string[11];
    list:ARRAY[1..128] OF string[11];
BEGIN
    {procedure}
    FOR counter := 1 TO 128 DO list[counter] := ' ';
    bb:=1;
    bdos($1A,$2080); {set DMA address}
    a:=Bdos($11, $5C); {search for first}
    WHILE (a<4) AND (bb<129) DO
        BEGIN {while}
            IF a=0 THEN b:=$80;
            IF a=1 THEN b:=$A0;
            IF a=2 THEN b:=$C0;
            IF a=3 THEN b:=$E0;
            FOR counter:= 1 TO 11 DO
                name[counter]:=chr(Mem[b+counter+$2000]);
            list[bb]:=name;
            bb:=bb+1;
            a:=Bdos($12, $5C); {search for next}
        END; {while}
        writeln('Name of output file, eg b:cat2.dat');
        readln(filout);
        assign(out, filout);
        rewrite(out);
        FOR counter := 1 TO bb-1 DO
            BEGIN
                writeln(out,list[counter]);
                write(list[counter], ' ');
                IF (counter MOD 5) = 0 THEN writeln
            END; {for}
        close(out)
    END; {procedure}

BEGIN {main}
    cat;
END.

```

Listing 1: A program that is called along with a filename in which wild cards are allowed. 'Grouper' will then write an output file containing the names of all the disk files whose names match the input filename. This program must be compiled starting at an address of \$2100 or above as discussed in the text. The \$ symbol means hexadecimal in listing.

Pascal. I hope it will also be useful to readers.

Let's look at the general program structure before we attempt to look at the details. We start with the word PROGRAM, followed by the name of the program and a separator, the semicolon. Global variables would usually be declared next, but GROUPER does not use any of these. Then come the procedures and functions that are subprograms and thus have the same general form. Each begins with the declaration PROCEDURE or FUNCTION, followed by the name and variables transferred, if any. You might note that variables (VAR) are declared within the procedure. These are local variables, meaning they are only valid within the procedure. The action starts with a BEGIN. A subprogram always ends with END; (the semicolon is required).

The main body of the program is deceptively simple. It consists of a BEGIN, the name of the subprogram (CAT), and END. (the period is used at the end of the main body only). If you intend to use this program, type it into your Kaypro exactly as shown. The punctuation is extremely important; a misplaced comma or semicolon will result in a program that will not compile.

You may have noticed other things about the listing that are put there for the benefit of the human reader. Pascal has a series of words, called reserved words, that have specific, predefined meanings. These words cannot be used for any other purpose. I typed reserved words in upper case to make them more obvious.

I also followed the common practice of selectively indenting in order to group corresponding parts of the program together. Groups of commands between BEGIN and END are indented so that the pairing is obvious. Finally, comments are contained between pairs of curly braces, { and }, or between the (* and *) pairs. They are the counterparts of REMarks in BASIC and are ignored by the compiler. I have made an effort to include many comments in my listings.

Grouper—it's not a fish

GROUPER.PAS is a program that makes use of only one procedure, but this procedure uses some of the more advanced features of CP/M, so you should consult a book if you're not familiar with system calls, etc. I recommend *Soul of CP/M*, by Mitchell Waite and Robert Lafore. The novice will find the CP/M manual rough going, even though it contains all of the information required.

The author of CP/M was kind to the users of the operating system. He provided a mechanism through which we can access some of the programs CP/M requires for its own use. We do this by supplying a function number (func) and an appropriate parameter (param), and then calling the program in machine code or assembler. This is known as a "BDOS system call." Often the system call returns a value that indicates the result of the operation. Turbo provides the statement BDOS(FUNC, PARAM), which can be used as a procedure to invoke a BDOS call; or it can be used as a function to obtain the value returned by the BDOS call. Both of these features are very useful in the hands of an experienced programmer.

Now let's look at the procedure CAT. First the VARIABLES and their types are declared. Integers and strings are very similar to their counterparts in BASIC, but in Pascal we need to declare the length of the string. The [11] indicates that the string variables "filout" and "name" can have up to 11 characters. We also reserve room for an array of strings, which we call "list." This array can hold 128 strings, each 11 characters in length or less. "Text" is a predefined type of file in Turbo. In our case it will turn out to be a type of disk file containing the names of other files, one to a line.

After GROUPER is properly compiled, it is run by typing **GROUPER filename**, and "filename" can contain wildcards such as *.dat. The CP/M operating system then puts the filename into a reserved portion of the memory called the file control buffer (FCB). The procedure reserves a portion of memory called the DMA (direct memory access) for its own use, starting at address 2080h (h=hexadecimal). BDOS calls are used

to place filenames matching the FCB entry into the DMA. CP/M stores filenames in groups of four in its directory, and the BDOS call returns a number (0,1,2,3) to indicate which of the four files matched the FCB contents. If no match occurs, a 255 (FFh) is returned.

The names of matching files are then copied into the array "list." The user is prompted for a filename, which is read in as the variable "filout" and assigned to the output file that will contain the list matching the input filename. The "rewrite" statement prepares the output file for writing and "list" is written both to the file and to the screen. The latter is done so that the user can see which filenames were actually stored in the output file.

There is still one detail we need to take care of. We must be careful to insure that Turbo does not compile the GROUPER program into the region of the memory we reserved for the DMA, so we will direct Turbo to compile the program at an address above our DMA. To do this, proceed as follows: From the Turbo Pascal menu, type **O** to get the options menu and then **C** to compile an executable file to disk. Then type **S** to alter the starting address and answer the prompt with 2100. Now you can type **Q** to return to the main menu and **C** to compile the program. If the code was typed correctly, a successful compile will take place. Type **Q** to exit Turbo. We now have executable code on the disk.

The main attraction

We are now ready to proceed with the main program, WRITER.PAS. The previous program, GROUPER.PAS, was fairly short, since we were able to take advantage of some of the powerful features of CP/M. WRITER is a somewhat longer program. A common method used to keep track of the logic is to write an outline of the program in English. This outline is called "pseudocode" and it's used for organizing your ideas before actually trying to write the program. The abbreviated pseudocode for WRITER is shown in Figure 1. If I were using this pseudocode as a blueprint for the program, Figure 1 would be considerably more detailed. But for our purposes, Figure 1 is detailed enough to demonstrate the logic of the program.

There are a few things to note. A procedure can be called either from the main program or from any other procedure. When the procedure called is finished, the program returns to the calling point. A main program can call a procedure, which calls another procedure. This second procedure can call a third procedure. Computer people call this "nesting." When the third procedure is finished, the program returns to the calling point in the second procedure, and when the second procedure is finished, the program returns to the calling point in the first. (Got all that?)

A second point is sort of obvious, but I've often gotten into programming trouble by ignoring the obvious. A procedure must be defined before it can be called! This dictates the order that must be used when writing your

FIGURE 1: PSEUDOCODE FOR WRITER

```

Declare global variables

Main program
  Initialize the array which holds the list of file names
  Call procedure 'loadlist'

Loadlist procedure
  If input comes from files created by 'grouper' call 'file_read'
  Read file names from disk file
  Write names in acceptable form
  Call procedure 'check'
  Eliminate non-ASCII files
  Load names of ASCII files into array 'list'
  If program accepts input from keyboard
    Read input and call check
    Eliminate non-ASCII files
  Load names of ASCII files into array 'list'
  Write list of file names to screen
  Return to main program

Main Procedure
  Query user if output is to go to printer or disk.
  If disk file is chosen call 'writefile'
  Create output file
  Write contents of first file in array to output
  Write contents of next file in array to output
  Repeat for all files in the array
  Write output to screen concurrently
  If printer output is chosen call 'print'
  Write contents of first file in array to printer
  Repeat for all files in the array
  Write output to screen concurrently
End of program.

```

Figure 1: Pseudocode illustrating the logic for the program 'WRITER'

listing. If you are not careful in ordering the procedures, your efforts will be rewarded with a compiler error—not a pretty sight.

Even though you can learn about the general logic of WRITER from Figure 1, there are still some interesting details that require comment. The source code for WRITER is shown in Listing 2. Notice the definition of a CONSTANT, N, which is the maximum number of files the program can handle. This allows you to change this maximum by changing only one number. The pseudocode of Figure 1 tells you that files are checked to see if they are printable (ASCII). This is done in procedure "check" by using the "copy" command to extract the portion of the filename, "name," that corresponds to the file extension. This extension is checked against four non-ASCII types that I regularly use—COM, OVR, HEX and FIN. If you regularly use different non-ASCII extensions, then you will want to add those extensions to the list.

There is some strange-looking code in the procedure "file—read." The FCB has 11 memory locations—eight for the filename and three for the extension. It does not store the separating period or the drive letter. The file containing this manuscript is stored in the FCB as WRITER MSS (there are two blank spaces between WRITER and MSS). This is the way GROUPER writes the filename to the file it creates. This is also the way the directory is printed when you type DIR. Try it. The procedure "file—read" first adds the drive letter and the period and removes the spaces, so that it looks like

LISTING 2: WRITER

```

PROGRAM writer;

CONST N = 100; {maximum number of files program can handle}

TYPE str = string[14];
      mat = ARRAY[1..N] OF string[14];

VAR filout,name:string[14];
    list:mat;
    inp,out:text; {predefined file type}
    i,ons,counter:integer;

PROCEDURE check( name:str;VAR counter:integer);
VAR j,k:integer;
BEGIN {check}
  FOR k := 1 TO 14 DO name[k] := upcase(name[k]);
  j := 0; k := 1; {initialize flag and counter}
  WHILE (name[k] < ' ') AND (k < 12) DO
    k := k + 1; {' ' cannot be at k>11}
  IF k < 12 THEN
    BEGIN {set flag if not text file}
      IF copy(name, k+1,3) = 'COM' THEN j := 1;
      IF copy(name, k+1,3) = 'OVR' THEN j := 1;
      IF copy(name, k+1,3) = 'HEX' THEN j := 1;
      IF copy(name, k+1,3) = 'FIN' THEN j := 1;
    END; {if-then}
    IF j = 1 THEN {flag set}
      counter := counter + 1;
  END; {check}

PROCEDURE file__read(VAR list:mat;VAR counter:integer);
VAR c:char;
    group:text;
    j,k:integer;
    temp:string[14];
BEGIN {procedure}
  name := ' '; {14 spaces}
  writeln('What is the name of the file? eg b:cat2.dat');
  readln(temp);
  FOR k := 1 TO length(temp) DO
    name[k] := temp[k];
  Assign(group,name);
  reset(group);
  WHILE NOT EOF (group) DO
    BEGIN {not eof}
      readln(group,temp);
      FOR k := 1 TO 8 DO
        name[k+2] := temp[k];
      name[11] := ' ';
      FOR k := 9 TO 11 DO
        name[k+3] := temp[k]; {get rid of spaces}
      k := 1; c := name[k];
      WHILE (c < ' ') AND (k < 11) DO
        BEGIN {while}
          c := name[k];
          k := k + 1;
        END; {while}
      k := k - 1;
      FOR j := 0 TO 3 DO name[j+k] := name[11+j];
      FOR j := 14 DOWNTO 4+k DO name[j] := ' ';
      list[counter] := name;
      counter := counter + 1;
      check(name,counter);
    END; {not eof}
  close(group);
  writeln('Read names from another file?');
  writeln('yes = 1');
  readln(k);
  IF k = 1 then file__read(list,counter);
END; {PROCEDURE}

PROCEDURE loadlist( VAR list:mat);
BEGIN {loadlist}
  ans := 0;
  writeln('If you wish to input from a disk file');
  writeln('type 1. If you will from both disk and');
  writeln('terminal input, start with disk input. ');
  readln(ans);
  IF ans = 1 THEN file__read(list,counter);
  writeln('Enter filenames, one to a line. Do not');
  writeln('exceed 'N' names. Last entry must be "+" ');
  readln(name);
  WHILE (name[1] < ' ') AND (counter < N + 1) DO
    BEGIN {while}
      list[counter] := name; {filenames into array}
      counter := counter + 1;
      check(name,counter);
      IF counter < N+1 THEN readln(name);
    END; {while}
    list[counter] := '+';
  WRITELN;WRITELN;
  i := counter - 1; {write out array of names}
  FOR counter := 1 TO i DO writeln(list[counter]);
END; {loadlist}

PROCEDURE writefile( list:mat );
VAR
  a:char;
BEGIN {writefile}
  writeln('Output filename?');
  readln(filout);
  assign(out,filout); {call output file filout}
  rewrite(out); {create new file to accept output}
  counter := 1;
  name := list[counter];
  WHILE (name[1] < ' ') AND (counter < N + 1) DO
    BEGIN {while}
      assign(inp,name);
      reset(inp); {open for processing}
      WHILE NOT EOF(inp) DO
        BEGIN {inner while}
          read(inp,a); {read from text file}
          write(a); {output to screen}
          write(out,a) {write to output file}
        END; {inner while}
      close(inp); {so we can assign a new name to inp}
      writeln; {start next file on a new line}
      counter := counter + 1;
      IF counter < N + 1 THEN name := list[counter];
    END; {while}
  close(out)
END; {writefile}

PROCEDURE print( list:mat );
VAR a:char;
BEGIN {print}
  counter := 1;
  name := list[counter];
  WHILE (name[1] < ' ') AND (counter < N + 1) DO
    BEGIN {while}
      assign(inp,name);
      reset(inp); {open input file for processing}
      WHILE NOT EOF(inp) DO
        BEGIN {inner while}
          read(inp,a); {read character}
          write(a); {write to screen}
          write(list,a) {write to printer}
        END; {inner while}
      close(inp);
      writeln; {start next file on a new page}
      counter := counter + 1;
      IF counter < N + 1 THEN name := list[counter];
    END; {while}
  END; {read}

BEGIN {main}
  writeln;
  FOR counter := 1 TO N DO list[counter] := '+';
  counter := 1;
  loadlist(list);
  i := 0;
  WHILE (i < 1) AND (i < 2) DO
    BEGIN {while}
      writeln('Write to a file or a printer?');
      writeln('1 = file, 2 = printer');
      readln(i);
    END; {while}
    IF i = 1 THEN writefile(list);
    IF i = 2 THEN print(list);
  END; {main}

```

Listing 2: "WRITER", a program which will accept input from files created by grouper or input directly from the terminal. The input consists of file names whose contents are checked to insure that they are printable. Then they are concatenated and written to the printer or a disk file.

B:WRITER.MSS. This is the form you would use when typing a filename on the keyboard. The latter form of the filename is loaded into "list" and checked to make sure that it is an ASCII file.

After the contents of all the files created by GROUPER are entered into "list," the program returns to "loadlist." We now have the option of entering additional filenames from the keyboard. We let the computer know that we are finished entering filenames by typing a plus sign (+). The contents of the files, whose names appear in "list," are then sent to the printer or a to newly created disk file. If you make a mistake and type another choice, the program just asks again. Since it has no DMA or other special memory requirements, WRITER is compiled in the normal fashion.

The beauty of the beast

The programs GROUPER and WRITER were chosen to illustrate some of the power and beauty of Pascal. I have made no attempt to get into the nitty-gritty of the individual Pascal statements, nor have I attempted to teach you how to program in Pascal. This would take a couple of hundred pages, and I seriously doubt the editors would allow me that much space.

The example programs do illustrate the modular nature of Pascal, making it easier to follow the program

logic. I have a small library of procedures that I can add to these or any other Pascal programs. For instance, I can insert a procedure that prints a directory of the disks to the screen. Naturally, I will then also have to add two or three lines to the main program that will allow me to call this procedure.

Pascal also has extremely powerful methods of defining variable types. You are limited only by your imagination. Just to whet your appetite, how about the ability to define a variable type "suit" that will have as its members spades, clubs, hearts and diamonds? Similarly, you could define the variable type "coins" that would have as its members quarters, dimes, nickels and pennies.

Putting it all to use

I promised to provide you with some useful programs before I was finished, and I believe I have. Now, along comes my older son, the computer science major, who points out that we can use the CP/M utility PIP to concatenate files into a single file. Then we can use the TYPE command along with ^P to write the file contents to the printer and screen simultaneously. The problem is that the PIP utility will not react correctly to wildcards when concatenating files.

Suppose you wrote a series of 20 articles and stored them using NAME.ART, where NAME represented the abbreviated name of the article. Now you wish to collect them into a single file. If you tried to do this with PIP you'd need to type PIP B:ARTICLES.TXT= followed by 20 filenames. Unfortunately, 20 filenames usually won't fit in the command line buffer CP/M gives you.

With my programs you would start by typing GROUPER B:*.ART (I'm assuming GROUPER is on disk A and the files are on disk B). Then answer B:NAMES.ART when queried by GROUPER for an output filename. Then type WRITER and choose "read from a disk file" when queried. When queried by WRITER for the name of the input file, answer B:NAMES.LST. You will need to indicate that you wish to write to a file when asked. The procedure "writefile" will then ask for an output filename, and you can answer B:ARTICLES.TXT. After WRITER is finished doing its thing, there will be a copy of a file on disk B that contains a concatenation of the 20 articles. It sounds complicated, but when you try it, you will find that is simple once you have compiled versions of GROUPER and WRITER. ■■

Edward Gelerinter is a physics professor at Kent State University. He uses computers extensively at work, but this does not stop him from writing about computing as his hobby.

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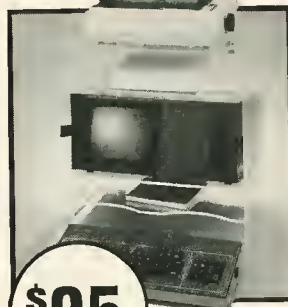


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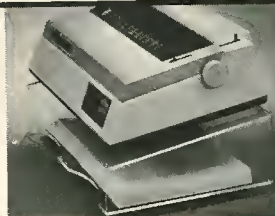
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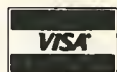
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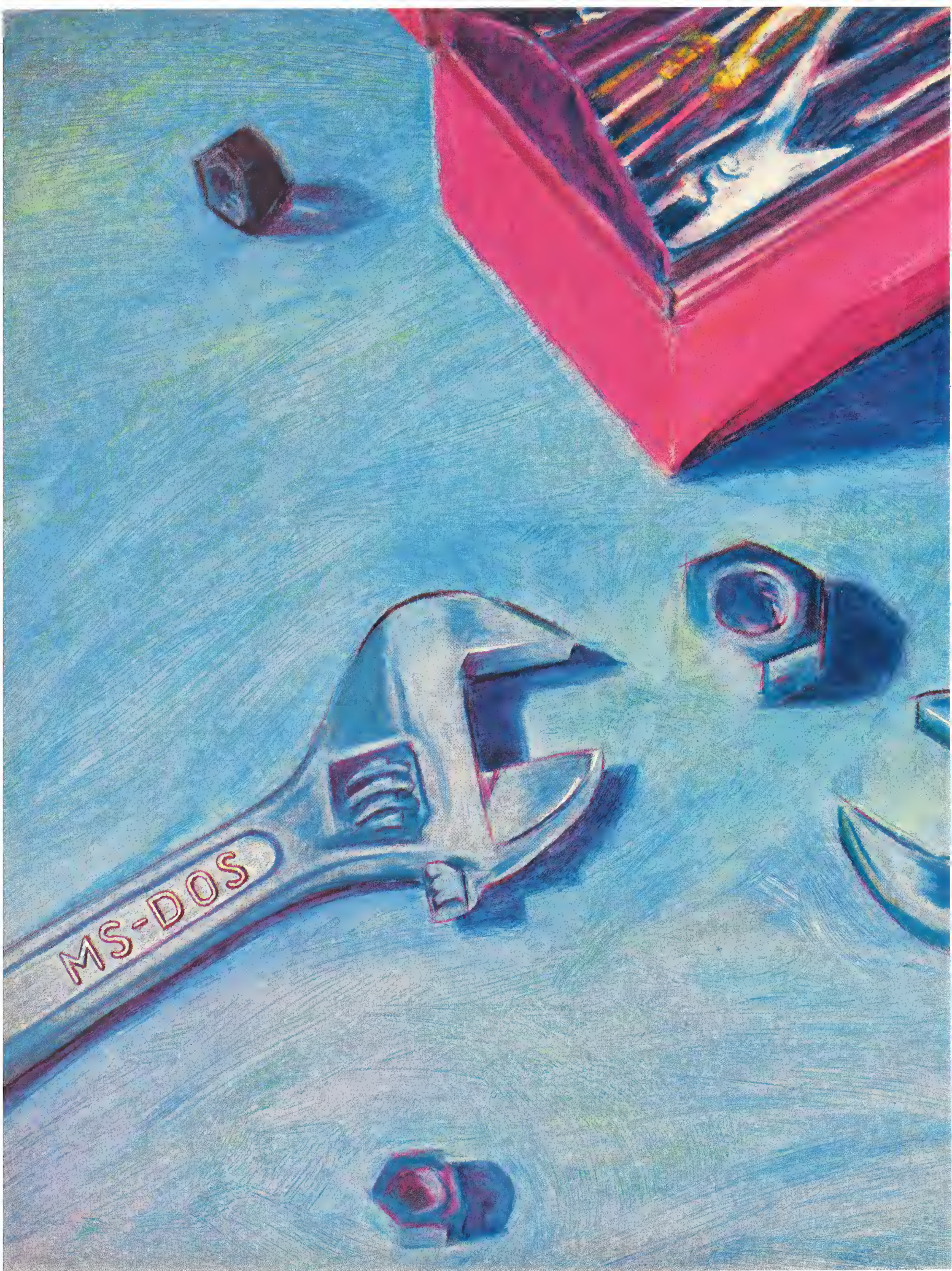
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MS-DOS and C/PM

*Similar tools with distinctly
different identities*

by Drew Finnie

A well-known ad campaign erroneously calls the microcomputer “a tool for modern times.” It’s not just a tool, it’s an entire toolbox, containing dozens of devices for fixing the problems of modern times. And like the master mechanic who has a chief assistant to get all the right tools and parts for the job, a computer user has an operating system to handle those tedious details. All the user, or mechanic, has to do is apply the proper tool to the problem.

CP/M and MS-DOS are the two chief assistants in microcomputing operations. However, although they both do the same job, they do not do it in the same way. They share

ILLUSTRATION BY PETE EVARISTO

ancestry, but each has a unique personality. To better understand one, it helps to know about the other.

This article will detail the ways in which MS-DOS is similar to and different from CP/M. After we give you a brief history of these operating systems, we'll explain some of the major differences between them and the reasons for those differences. Finally, we'll tell you what MS-DOS can do that CP/M can't.

(This article is intended as an introduction to MS-DOS, but for more detail on the basics of its use, see "Beginner's Luck" in this issue.—Ed.)

Roots in CP/M

To understand why MS-DOS resembles CP/M so much, you need to know how they both came into being.

It may be hard to believe, but CP/M is only 11 years old. Written in 1974-75 by Digital Research founder Dr. Gary Kildall, CP/M was the first generic microcomputer operating system. It was a giant step forward for personal computing. Before its birth, you really *did* have to be a programmer to be able to compute, because there was a different operating system for each brand of computer and they frequently required some modification.

By the end of the decade, almost every 8-bit computer used CP/M as its primary operating system. Even for the Apple, which uses Apple-DOS, CP/M is widely employed as a secondary operating system by means of a co-processor board—it's estimated that 30 percent (over a million) of all Apples are outfitted this way.

In 1979, the second generation of microprocessor was created. Intel announced it was ready to market a new family of CPU chips, the 16-bit 8086 and 8088. A year later, a company called Seattle Computer Products began selling boards using the new chips and started to search for a new operating system to run

QDOS—"Quick and Dirty Operating System"— was modeled on CP/M for the 8086 chip.

them. Since CP/M was the dominant program in the 8-bit world, Seattle Computer asked Digital Research to write a 16-bit version that would be known as CP/M-86.

Had Digital Research delivered CP/M-86 on schedule, MS-DOS might never have seen the light of day. But, as happens in the computer industry, problems cropped up. DRI missed several deadlines and Seattle Computer finally decided it couldn't wait and wrote its own operating system.

The result, written by SCP programmer Tim Patterson, was called QDOS for Quick and Dirty Operating System. Because of CP/M's popularity, Patterson modeled QDOS after it. He wanted his program to take

advantage of the 8086's more advanced capabilities while still allowing programmers to transfer their work from 8- to 16-bit systems with as little difficulty as possible.

Partly because Patterson had a ready-made blueprint in CP/M, the first version of QDOS was completed in just a few months. It was tested during the summer of 1980, enhanced, and commercially released in the fall as 86-DOS. Meanwhile, Digital Research's CP/M-86 was finally issued in late 1980.

Six months later, Microsoft Corporation bought 86-DOS from Seattle Computer and renamed it MS-DOS. In August 1981, IBM announced its new Personal Computer would use a proprietary version of MS-DOS rather than CP/M-86, and the rest, as they say, is history.

The similarities

Because of its background, MS-DOS is really a cousin of CP/M. It's a lot like the relationship between French and Spanish: Both operating systems share the same heritage; if you know one, it's easier to learn the other.

Program Organization. The similarities begin with the programs' organization. CP/M is divided into three parts: the BIOS (Basic Input/Output System), BDOS (Basic Disk Operating System), and CCP (Console Command Processor). Similarly, MS-DOS has an input/output module called IO.SYS, a disk operating system known as MS-DOS.SYS, and a command interpreter called COMMAND.COM. Also following the CP/M model, all three parts are stored on disk and loaded sequentially during the power-up sequence.

To save RAM space, MS-DOS incorporates CP/M's idea of dividing system commands into two types. Frequently used commands (like copying files or displaying directories) are an integral part of the interpreter and are known as "internal" commands. These are loaded directly into RAM at bootup and can be used immediately when you see the system prompt.

Less frequently used commands, known as "external commands," are available as files on the system disk where they don't take up precious RAM space. These must be present on the disk you are using to be accessible.

System Functions. In addition, many MS-DOS functions are either the same as those in CP/M or only slightly modified. Such familiar commands as DIR, TYPE and REN have been carried over under the same names. Others, like SYSGEN and PIP, are available under other names (SYS and COPY) but do essentially the same things. Even the MS-DOS system prompt, A>, will be recognized by millions of CP/M users.

The differences

Despite the similarities, MS-DOS is *not* merely a 16-bit copy of CP/M. The Microsoft team that modified the original 86-DOS program wanted to incorporate the best aspects of CP/M, and then add some improve-

ments. The result was a program retaining the power and flexibility of CP/M while providing users with a more "friendly" interface.

*MS-DOS is not merely
a 16-bit copy of CP/M.
Microsoft wanted to
add improvements.*

The desire to give MS-DOS a logical user interface was the major concern. CP/M, for all its power, is often criticized for its lack of "user-friendly" commands and terminology. Microsoft wanted to make sure users would be able to easily understand how to manipulate the new operating system. They accomplished this by using mnemonic terminology and making command syntax more logical.


Mnemonic Terms. In CP/M, if you want to copy a file you use the PIP command. Why give a file copying command such an obscure name? The answer lies in CP/M's background. CP/M is descended from various operating systems developed during the sixties. Because of this, the program was written with interface terminology only a computer programmer could love. PIP stands for "Peripheral Interchange Program" and means, in computer lingo, a program to copy files from

one location to another. Other terms include "TTY," which designates the computer's serial port (used for telecommunications) and "LST," which names the parallel printer port. There are even references to a paper tape reader (RDR) and a card punch (PUN), which were used in the sixties but have long since faded into obsolescence.

Microsoft felt these were major shortcomings in an otherwise powerful program and was determined to correct the problem in MS-DOS. Thus, a new user interface was written that uses mnemonic command names and terms. Instead of PIP, there is the "COPY" command; instead of TTY, it's "COM" (communications); and "LPT" (line printer) replaces the older LST. In most cases MS-DOS commands and terminology are much easier to remember because they are based on common sense.

Command Syntax. The next major difference is in command syntax—the way a command is phrased. In CP/M, the syntax seems backward. Using PIP as an example, the order goes like this: **PIP B:mom.doc=A:mom.doc**. Translated into English, this says, "Copy to the B drive the file mom.doc from the A drive's file mom.doc." Or briefly, "To destination drive and filename from source drive and filename." The equals sign is read as "from."

MS-DOS reverses the syntax so that it correlates more closely with how humans order their thoughts. The same example above would look like this in MS-DOS: **COPY A:mom.doc B:mom.doc**. In English it



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reads almost exactly the same: "Copy the A drive's file mom.doc to a B drive file of the same name." There is no cryptic equals sign, and the order is straightforward and unconfusing.

Error Handling. In addition to command names and command syntax, another difference between the two operating systems is how they handle errors. If you're a

*MS-DOS handles errors
in a much more
forgiving way. Most
mistakes aren't fatal.*

CP/M user, how many times have you seen the "BDOS ERR on A: READ ONLY" message on your screen? This is a familiar error message if you've forgotten to log in a new diskette. The end result is that you may lose any work you've already done and a reboot is necessary.

MS-DOS handles errors in a much more forgiving way. Most of the time, mistakes aren't fatal. When you do make a mistake, MS-DOS will display an error message with the additional line "Abort, Retry, Ignore?" Just type the first letter of the option you want. If you decide to abort, the worst that can happen is that you'll be sent back to the system prompt.

Sometimes, the error is correctable. All you have to do is make the change and then type R. MS-DOS will try to run the command again with the change. For example, if you tried to copy a file from drive B to drive A and had forgotten to put the disk with the desired file into drive B, you would get an error message like this:

"Read fault error; Reading Drive B

Abort, Ignore, Retry:"

You would simply stick the right disk in drive B and press R, and the command would execute correctly.

The improvements

There are, naturally, some things that MS-DOS can do that CP/M can't, simply because MS-DOS and its partner, the 8086 family of microprocessors, are technically more advanced. The first of these capabilities is getting a lot of attention these days and has to do with the quantity of RAM available for MS-DOS's use.

Resident Programs. Since MS-DOS usually has at least 256K of RAM to work with, memory-resident programs become more feasible. These are programs like SideKick or key definition packages that load into memory and then use MS-DOS's "terminate but stay resident" function. This lets MS-DOS keep the loaded program in memory, ready to be called into action, while running other programs at the same time. When a special sequence of keystrokes is entered, control passes to the resident program, which does whatever it has to do and then returns control back to the program that was interrupted.

Communicating with Peripherals. The other thing that MS-DOS can do much better than CP/M is talk to peripherals—devices added on to the main system. (The most common, of course, are printers and modems, but there are also plotters and mass storage devices such as RAM disks and hard disks, and more are being created all the time.) MS-DOS allows you to write a program in assembly language called a "device driver." This contains precise instructions to the computer on how to connect to and control the peripheral in question. You add this device driver to your basic operating system through the CONFIG.SYS file, a file that tells MS-DOS what changes have been made to the standard operating system.

CP/M does not allow itself to be modified in this manner. In order to change the way it talks to peripherals, you must go into the guts of CP/M itself and change the BIOS—not an easy task even for programmers.

Time and Date. Another nifty feature of MS-DOS that's an improvement over CP/M are the time and date functions. Whenever you start up or reboot an MS-DOS machine, it will first ask you for the time and then the date. You can ignore these if you wish by just pressing RETURN twice; the date and time will stay the same as when they were last set.

But this is ignoring a valuable timesaver. MS-DOS automatically logs the date and time when you create or edit files. If you make a habit of entering the new information, every file will be tagged with the date and time it was created or edited. By using the MS-DOS

*Some MS-DOS features
were borrowed from UNIX,
a popular mainframe
operating system.*

command BACKUP, with the choices /M, /D, or /T, you can make backup copies of only those files that have been modified (/M), those that have been changed since a certain date (/D), those changed since a certain time (/T), or a combination of these.

(You can also record the time and date on entire disks by using the /V switch when formatting them—very helpful when trying to keep track of many disks.)

UNIX-like Features. Some other features of MS-DOS were borrowed from UNIX, one of the most popular mainframe operating systems. These features are I/O (input/output) redirection and pipes.

I/O redirection is the ability to take output intended for one device, such as a printer, and send it to the screen or a disk file instead. Let's say that you wanted a disk file that contained a listing of all the programs on a particular drive. Now, the DIR command gives you a nice list of your programs, but it sends its output to the

screen instead of a disk file. By typing the command **DIRA: >FILES.LST**, DOS will write the output of DIR to the file FILES.LST instead of the screen. The greater-than symbol redirects output; a less-than symbol redirects input.

A "pipe" performs some specific operation on the output of a program before sending it to the intended destination. Let's assume that you still want a disk file listing the files on a specific disk. But this time you want the files to be sorted in alphabetical order. To do this you would type **DIR | SORT >FILES.LST**. The vertical bar "I" is a signal to DOS that whatever follows is the name of a pipe. In this case we used the SORT pipe to alphabetically sort the output from the DIR command before writing it to the file FILES.LST.

Another popular pipe is MORE. This particular pipe is usually used with the TYPE command to pause screen output after each 23 lines. (It's a lot easier than trying to type ^S before the output scrolls off the top of your screen.) Check your MS-DOS User's Guide for a listing of all the available pipes in your version of DOS.

Conclusions

Now you can see that, instead of starting from scratch, the authors of MS-DOS borrowed liberally from CP/M and then improved on it. After all, DOS has more

memory with which to work and is based on a more sophisticated microprocessor than its 8-bit counterpart. You give programmers that much more power and they'll run with it.

And yet, even after five years of improvements, MS-DOS still bears a striking resemblance to CP/M. That fact was not lost on CP/M author Kildall. In an interview published in the July 1985 issue of *Personal Computing*, the head of Digital Research said, "When I looked at the function calls of the first version of MS-DOS, I was astounded. The only differences [from CP/M] were errors in interpretation." The old adage holds true: There are few new ideas, but many variations on themes.

Drew Finnie is assistant director of sports communications at the University of Maine at Orono, where he uses a Kaypro 16 to write media guides and releases. He is a co-founder of the Bangor Area Kaypro Users Partnership and co-sysop of the Black Bears Den RBBS. Anyone with questions about MS-DOS can contact Finnie via the RBBS at (207) 827-7517 between 8 p.m. and 8 a.m. EST (300/1200).

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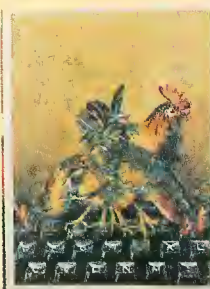
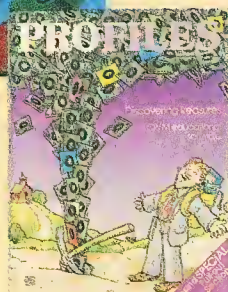
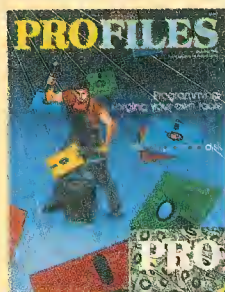
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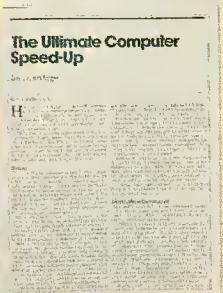
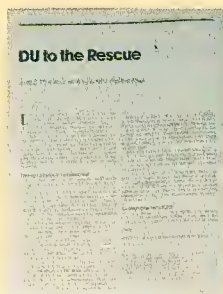


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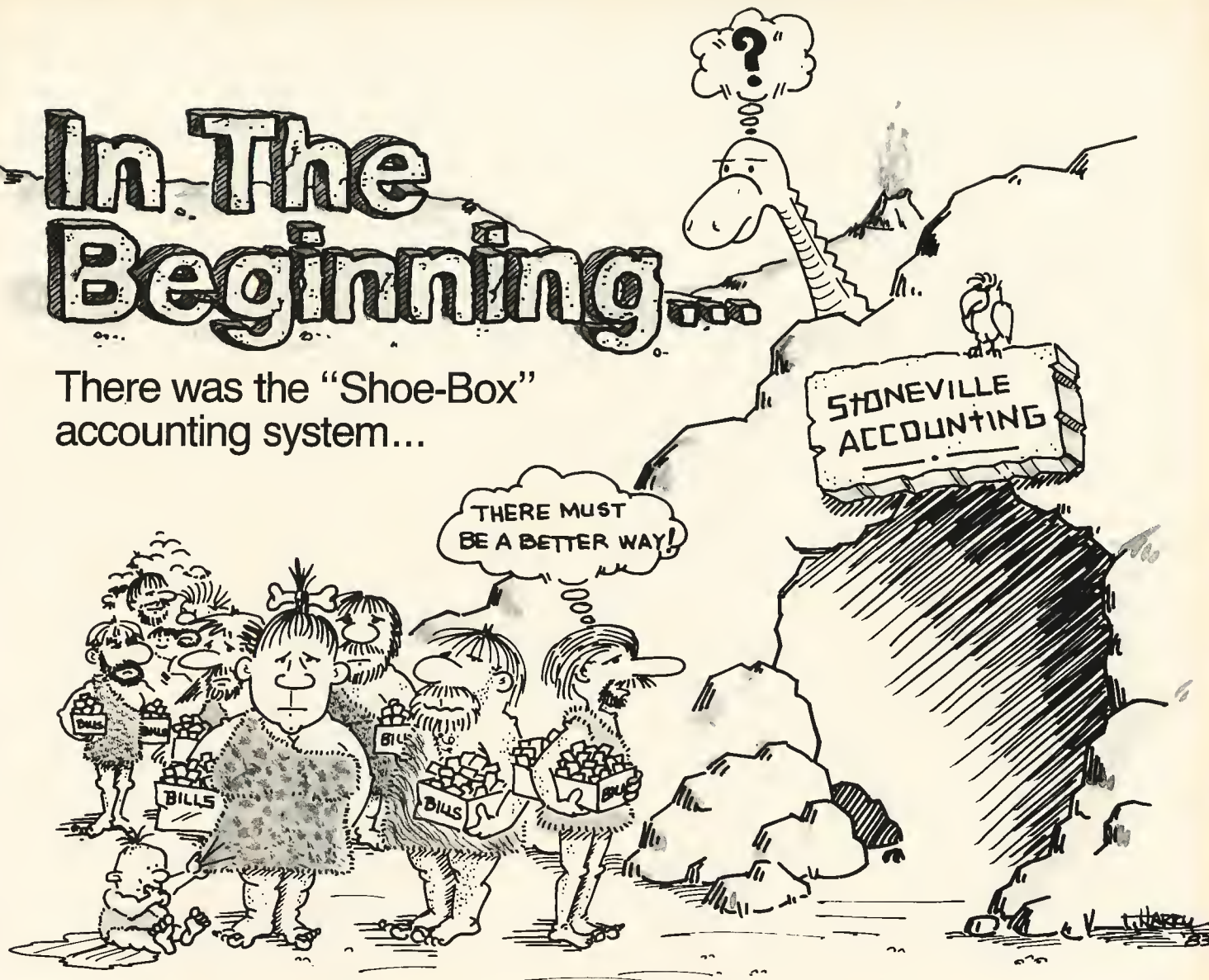
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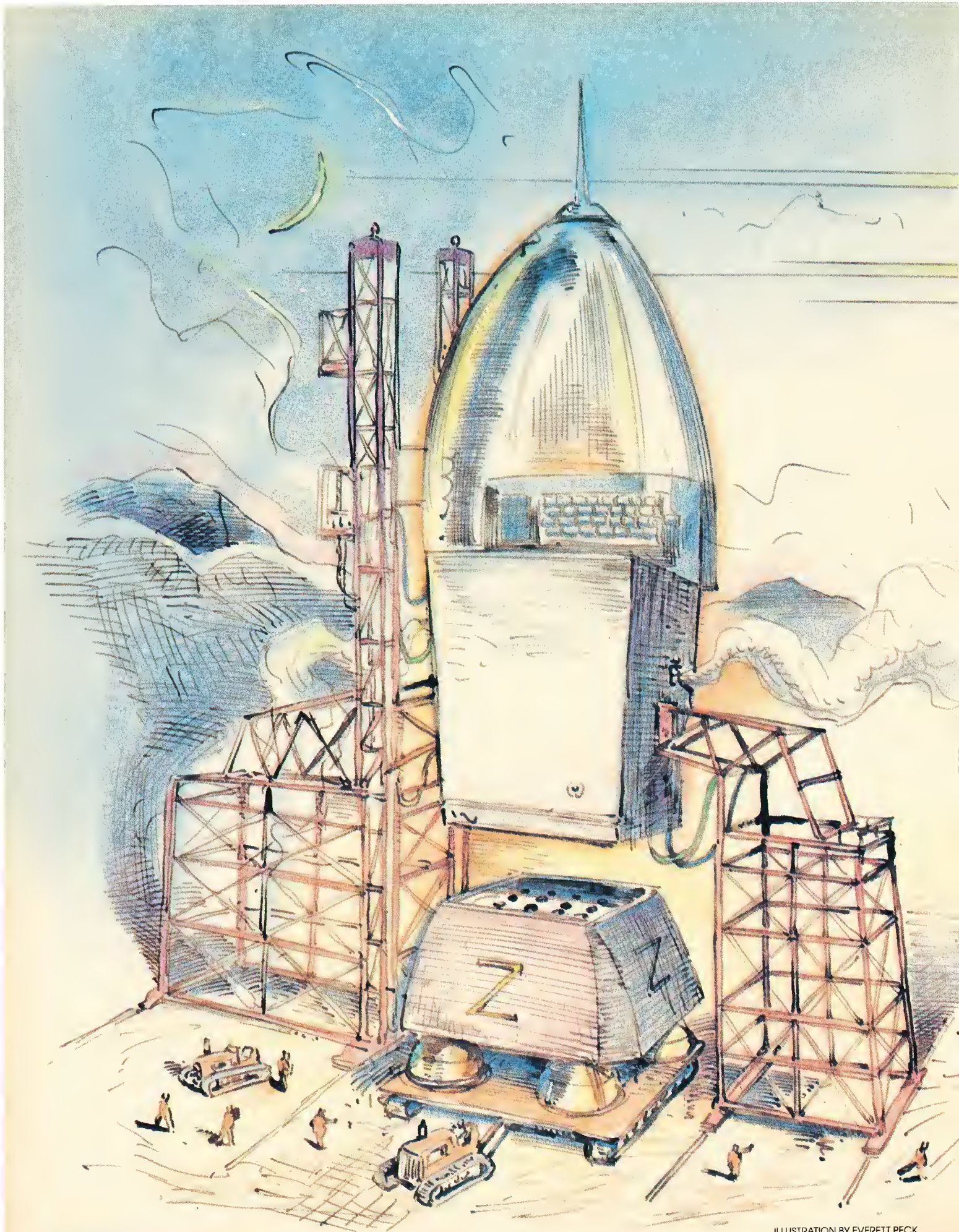
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Installing this powerful booster

by Ted Silveira

Last month I gave you a glimpse of what the Z-System can do; the next step is to get it installed on your Kaypro. People will tell you that this job is for experts, and in the past, it was pretty much true. To install ZCPR3—the core of the Z-System—you had to know enough about assembly language and operating systems to modify CP/M itself.

There are easier ways, however. Though the “manual” installation is still the most flexible, you can now choose one of two easier routes—the automatic installation available commercially or one of the pre-fabricated installations available from the public domain. Before I talk specifically about these methods, let’s take a general look at what happens when you install ZCPR3.

What’s goin’ on

When ZCPR3 is installed, it replaces the part of CP/M known as the console command processor (CCP). ZCPR3 also requires some space outside the CCP area for the buffers, resident command packages, and other options I covered last month. This extra space is created by relocating the CP/M operating system.

Figure 1 (on page 44) is a simple block diagram of your computer’s 64K RAM (random access memory),

showing the layout of a standard Kaypro CP/M system. Aside from a reserved block (256 bytes) at the very bottom, CP/M lives in the uppermost section of your computer’s RAM, occupying about 8K. The space in between the reserved block at the bottom and CP/M at the top is the transient program area (TPA), the space in which programs like dBASE II and WordStar run.

CP/M itself has three parts. The CCP interprets commands entered at the keyboard and contains built-in commands like DIR and TYPE. The BDOS (basic disk operating system) handles general duties—reading and writing to disks, sending characters to the screen, and creating and erasing files. The BIOS (basic input/output system) handles the nitty-gritty details of working with the Kaypro hardware.

In Figure 2 (also on page 44) a block diagram of a computer’s RAM with ZCPR3 installed, you can see two differences. First, ZCPR3 has replaced the standard CP/M CCP. Second, the whole operating system has been moved lower to make room for the ZCPR3 buffers and command packages at the top. Because the operating system has been lowered, the TPA is now smaller, by anywhere from 1K to 6K or more.

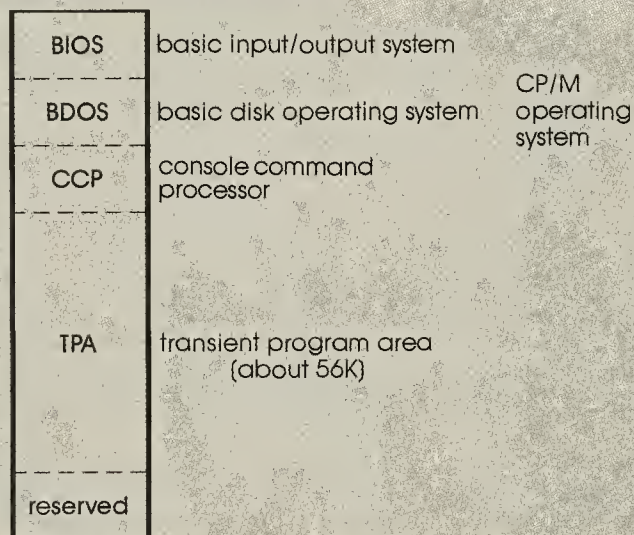
Automatic installation

Echelon, Inc., the distributor of the commercial Z-

System, offers two automatic installation packages, created by Joseph Wright. The Z3-Dot-Com package automatically installs ZCPR3 on your system, while Z-Com installs both ZCPR3 and ZRDOS (a replacement for CP/M's BDOS, described last month). Both packages are available with or without the ZCPR3 utilities.

• **Installing Z-Com**—The actual process of installing Z-Com (or Z3-Dot-Com) could hardly be simpler, unless Echelon sent someone out to your house. To install Z-Com, for example, first you copy the files from the two master disks—they'll all fit on one disk if you have a Kaypro 4, 2X, or 10.

FIGURE 1 (approximate only)



Second, with this new working disk in drive A, you run a SUBMIT file by entering **SUB ZCCOM** at the **A>** prompt. For the next two minutes or so, your computer whirrs away, loading data files, creating four files (ZC.COM, ZCX.COM, ZC.CP, and ZC.ENV) for your new system, and installing whatever ZCPR3 utilities are also on the working disk.

Third, as the SUBMIT file ends its run, it boots up the new Z-System and runs a program called TCSELECT that asks you to select your terminal type. Kaypro owners must choose between "Kaypro II" and "Kaypro 10." Choose "Kaypro II" if you have an '83 series Kaypro (those without half-intensity or reverse video). Choose "Kaypro 10" if you have an '84 series or other model Kaypro (*with* half-intensity and reverse video). Once you've selected the terminal type, TCSELECT creates the file MYTERM.Z3T.

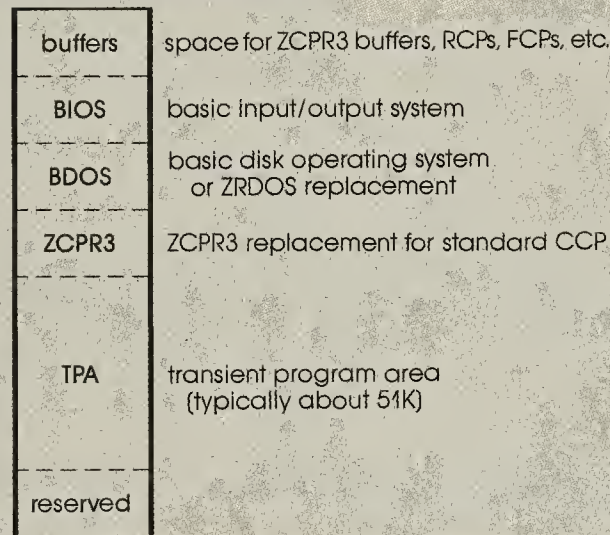
The SUBMIT file then passes control to your new Z-System. Total time for installation is three to five minutes, depending on how many utilities have to be installed.

For ease of use, you should set every program disk to automatically run the newly-created ZC.COM whenever you cold boot (start up or reset) your computer. ZC.COM contains your new operating system and loads it into memory. On every program disk, you'll also need

ZC.CP, which contains the new CCP that's loaded on a warm boot, as well as ZC.ENV and MYTERM.Z3T, which contain descriptions of the system configuration and terminal characteristics.

• **Features**—Z-Com gives you a full Z-System. You get search paths, a multiple command line buffer, and named directories. You get a 2K resident command package (RCP) that includes CP (copy), LIST, PEEK, and POKE. You get a 0.5K flow command package (FCP) that includes IF, ELSE, IF EXIST, and IF ERROR. And you get 1.5K allocated for an input/output package (IOP), if you choose to buy or create one.

FIGURE 2 (approximate only)



You also get ZCX.COM. This program removes the Z-System and returns you to standard CP/M—useful if you discover any programs that won't run under this Z-System. You can reload the Z-System by running ZC.COM.

This full-featured Z-System uses 5.5K of memory, reducing the usual Kaypro TPA from about 56K to about 50.5K, still plenty for most programs.

• **Drawbacks**—There are three main drawbacks to this automatic installation. First, you have to buy it. The price is reasonable, but if you can get ZCPR3 for free through a local users' group or bulletin board, you may think twice. On the other hand, if you have to pay for the users' group disks or make toll calls to reach a bulletin board, the final cost may not be much less than an automatic installation package.

Second, you have to allot space on your disks for the files generated by the installation process, especially ZC.COM (12K) and ZC.CP (2K). These programs aren't needed with other methods of installing ZCPR3, in which ZCPR3 and its buffers are made part of the CP/M system image found on the system track of your disks.

Third, you can't alter the size of this Z-System installation. That is, you can't make a larger or smaller system, as you can with a manual installation, so you're stuck with the 50-51K TPA. You can still alter the

commands contained in the FCP, RCP, and IOP by creating a new package and loading it each time the system is started up.

• **Modifying the Installation**—I found that you can substitute your own RCP, FCP, and so forth for those normally contained in ZC.COM. Using the ZCPR3 source files (and a macro assembler), create a new package to fit in the space already allotted and then patch this new package into ZC.COM with DDT. After that, ZC.COM will load your new packages instead of its standard ones.

Semi-automatic installations

Through the public domain, you can get several ZCPR3 installation "kits" for various Kaypro models. These kits contain prefabricated ZCPR3 installations in which the hard work has already been done. Though some kits require more technical knowledge than Echelon's automatic installation, they're all within the range of the average user and *much* easier than the manual installation.

• **Installing a Kit**—These semi-automatic installation kits include several files. They contain directions for installing the kit, the source code for important parts of ZCPR3 (modified for the Kaypro), ready-to-run versions of the RCP and FCP, and a few important ZCPR3 utilities (you're expected to acquire the rest on your own). And, of course, they include ZCPR3 itself, either in a modified SYSGEN program or in some HEX files (files with the filetype .HEX) to be patched into your system.

If a kit comes with an already modified SYSGEN, installation is simple. Place a copy of the ZCPR3-modified SYSGEN (along with the other kit files) in drive A and run it, following the directions to write the

*The "kits" are all
much easier than
manual installation.*

ZCPR3 system onto the disk in A. Then cold boot your Kaypro, and you're running ZCPR3. Install whatever ZCPR3 utilities you have, and write your new ZCPR3 system onto your other working disks.

If a kit comes with just HEX patch files, you must install the patches yourself, using DDT to create a modified SYSGEN (all the kits I've seen contain step-by-step instructions). Then use the modified SYSGEN to write the ZCPR3 system onto your disks and proceed as above.

• **Features**—I don't know how many prefab kits are available from the public domain, but here's a quick review of three common ones. All three use search paths, multiple command lines, and the standard buffers.

• **K83ZCPR3:** This kit, put together by Steven Cohen

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and Richard Jacobson (can be found on the Lillipute Z-Node BBS, 312/649-1730), is for early Kaypro II's and IV's (the '83 series, without graphics). It is easy to install (using SYSGEN) and requires no patching.

This kit doesn't have space for an IOP but includes three alternate FCPs and two alternate RCPs. The GET, GO, and POKE commands are available, so you can use the "poke & go" trick I described last month. And the CP (copy) and PEEK commands are also available.

This installation doesn't have the built-in commands DIR, ERA, REN, and TYPE in the CCP. One RCP contains DIR, ERA, and REN commands, while the other contains ERA, REN, and TYPE, so you'll have to use a transient program for either your DIR or TYPE command. Since you probably already have D.COM, you can easily dispense with DIR.

- **KP484Z3:** This kit, by John Smith of Manlius, New York, is for the '84 series Kaypro 4 (with clock and internal modem). It, too, is easy to install because it comes with an already modified SYSGEN. KP484Z3 and K83ZCPR3 use the same system configuration, very handy if you happen to have both an old and a new Kaypro.

This kit offers only one RCP and one FCP. The FCP includes all the important flow commands, and the RCP includes the CP and PEEK commands, among others. Unfortunately, the GET and POKE commands are missing.

The RCP also has some custom commands added by John Smith. OKI10 sets an Okidata 92 printer to 10 characters per inch (cpi), while OKI12 sets it to 12 cpi. GRAF toggles a filter to remove or restore graphics characters, and TIME displays the current time.

- **BIOSMMR:** This kit by Michael Rubenstein, for the Kaypro 10 only, isn't just an installation of ZCPR3—it's a new BIOS that adds many features, including an extra megabyte of space on the hard disk, redirection of screen output to a disk file, a graphics filter, fast resets, and more.

Briefly, the BIOSMMR package contains 14 HEX files (and the source files), each with a different selection of BIOS features. Twelve of these give a fully-loaded installation with a 50K TPA; two give a minimal installation with a 55K TPA. BIOSMMR also contains two other HEX files, one installing ZCPR3 for the 50K system and one for the 55K system. The 55K installation is minimal, supporting only the ERA and SAVE commands. The 50K installation supports the GO, GET, and SAVE commands, as well as an RCP and an FCP. The missing built-in commands can be replaced with transient programs (XDIR.COM or D.COM replacing DIR, for example). These programs load so quickly from the hard disk that the time loss is small.

You must patch these HEX files into the Kaypro 10's PUTSYS by using the public domain program MLOAD and Rubenstein's own BINSTALL program. If MLOAD isn't included with the BIOSMMR kit, get it from the same public domain source.

While the ZCPR3 installation isn't quite what I'd have chosen for myself, the BIOS features make it a remarkable package.

- **Drawbacks**—One drawback to all of the kits is that you get someone else's choice of features and system size. Whether this problem is serious depends on your desires. I'd hate to lose the GET, POKE, and GO commands, but other people might not care.

One drawback to kits is you get someone else's choice of fea- tures and system size.

A second problem for some kits is that you have to apply patches using DDT. The directions are simple, but the installation isn't as automatic as Echelon's Z-Com. This problem doesn't occur with kits like KP484Z3, which only require you to SYSGEN a disk.

A third possible problem is that once you've installed a kit, you can only get back to standard CP/M by cold booting a standard CP/M disk. You have no utility that will quickly remove ZCPR3, as ZCX does in the automatic installation. Still, few people should ever need to do that.

Finally, a particular kit may not work on your Kaypro if you have an incompatible ROM or BIOS version, especially if the kit uses HEX patches. There are, for example, two versions of Kaypro's CP/M 2.2G, each starting at a different memory address. A patch written for one version won't run on the other without modifications.

- **Modifying the Installation**—As with the automatic installation package, you can always put together a new RCP or FCP for one of these installations—if the particular installation allots space for these packages, and if you have a macro assembler.

If you do have a macro assembler, you can also take a kit that includes the source code, modify the installation to fit your own desires, and then reassemble it. This way, you get a custom installation without having to start from scratch.

Manual installation

In a manual installation, you start with the ZCPR3 source files and build a system of exactly the size and configuration you want. Such an installation requires that you have a macro assembler and that you know something about assembly language and about your computer's BIOS. You don't have to be a pro, but you won't get it done in an afternoon, either.

- **Installing ZCPR3 from Scratch**—I can't trace each step for you here (not enough space and too many different Kaypros), but in an outline, here's what you do.

First, collect the ZCPR3 source files and the installa-

tion documentation. Read it thoroughly before you start.

Second, decide what features you want—there's not room enough for everything. You should at least include what ZCPR3's author, Richard Conn, calls the "standard overhead," which includes search paths, multiple command lines, and the various ZCPR3 buffers. These things make ZCPR3 what it is.

Third, figure out how much space the features you've selected take up so you'll know how much space to allot for the RCP, FCP, and IOP (assuming you use them). The only reliable way to figure this out is to do a trial assembly of the various pieces. You'll undoubtedly discover that everything you want won't fit or that the cost in space is too great. So adjust and try again.

Obviously, the second and third steps are a cut-and-fit cycle you may have to repeat many times. You can save time by examining some of the semi-automatic installation kits to get an idea of how much space things take.

Fourth, create space in your Kaypro's RAM for ZCPR3 by using the CP/M utility MOVCPM to move your CP/M system (CCP, BDOS, and BIOS) lower in memory. By moving CP/M lower, you create empty space at the top of the memory that you can use for the RCP, FCP, IOP, and buffers. (Kaypro 10 owners don't get MOVCPM and must use the alternate method described in their documentation.)

(Note: While using MOVCPM on a Kaypro 4-84, I discovered an odd "feature." I created a 60K system, but when I ran it, it signed on claiming to be the standard 63K system. I thought at first that MOVCPM had failed. But when I checked, I found I did indeed have a 60K system—only the sign-on message was wrong.)

Fifth, add a routine to your computer's BIOS to set all the ZCPR3 buffers to the proper values on a cold boot. The ZCPR3 installation instructions show a sample routine, but implementing it on a Kaypro is up to you.

Sixth, assemble your ZCPR3 package into one or more HEX files and, having captured a SYSGEN image of your new smaller CP/M system, patch in the HEX files using DDT. Now you have a modified SYSGEN, containing ZCPR3, that you can use to make ZCPR3 disks. If you're going to use ZRDOS or ZRDOS Plus, you'll patch it in at this point also.

Seventh, after testing your new system, use the ZCPR3 installation program, Z3INS, to install whatever ZCPR3 utilities you have.

• **Drawbacks**—The drawbacks of this method of installation are obvious. It takes time and technical knowledge, though you can save both time and grief by studying the installation kits and borrowing from them. The payoff for your effort is a custom system that has exactly the features you want.

(continued on page 60)

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Electronic RAM Disk: High speed internal RAM Disk for all Kaypro models. Expandable to 1Mb in 256K increments, then add the 1Mb expansion board for a full 2MB RAM Disk. This RAM Disk delivers more performance than the competition. Add hard disks or Real Time Clock later and save.

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File Transfer Service: Advent provides a service beyond the ability of any format conversion software! We can transfer files between MS-DOS/PC-DOS, CP/M and other operating systems in 300 different 3 1/2", 5 1/4" and 8" formats. Includes Apple, Apricot, Data General One, Kaypro 2000, Eagle, Epson, HP-150, and North Star computers.

Format conversion service Call for Information and pricing

HARDWARE & ACCESSORIES

External Monitor Adaptor: The External Monitor Adaptor (EMA) allows your Kaypro to drive an external video monitor. Original characters and video display remain unchanged. The Kaypro monitor remains operative. Simple plug-in installation.

EMA Kaypro II or 4\$59.95

Taxan 115 Monitor (12" Green)\$149.95

Taxan 116 Monitor (12" Amber)\$159.95

EMA Kaypro 2'84, 2X, 4'84, 10'84\$74.95

EMA Kaypro 10'83\$82.95

12" Green Monitor*\$159.95

12" Amber Monitor*\$169.95

*Specially modified monitors must be used with all Kaypros except the original model II and 4.

Clock/Calendar: Real time clock/calendar for all Kaypro computers without built-in clocks. Works with Plu*Perfect DateStamper or your own application software. Source code drivers provided for use with MBASIC, SBASIC, dBASE II, Turbo Pascal, C, and assembly languages. The Clock/Calendar also functions as a host adapter to our RAM Disk and hard disk add-on products. Add these other products later and save money.

Clock/Calendar Interface\$99.95

TurboROM: A ROM enhancement for all 8-bit Kaypro computers. Faster disk read/write, keyboard type-ahead, faster video display for newer Kaypros, and larger TPA (63K) for the Kaypro 10. The TurboROM supports up to four 48TPI (392K) or quad density 96TPI (790K) floppies all with 255 directory entries. Built-in drivers support up to 2Mb of RAM Disk and up to 112Mb of Hard Disk. Many more features. Specify Kaypro model when ordering.

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Electronic RAM Disk: High speed internal RAM Disk for all Kaypro models. Expandable to 1Mb in 256K increments, then add the 1Mb expansion board for a full 2Mb RAM Disk. This RAM Disk delivers more performance than the competition. Add hard disks or Real Time Clock later and save.

Speed Comparison at 4 MHz - Times measured in seconds.

Function	Floppy	MicroSphere	SWP	Advent
Load "Ladder.com"	8.89	2.21	1.82	.80
Write 64K file	55.65	3.25	2.93	1.52

256K RAM Disk\$399.95

512K RAM Disk\$504.95\$459.95

768K RAM Disk\$599.95\$519.95

1Mb RAM Disk\$689.95\$579.95

1Mb Expansion Board (256K Installed)\$355.95\$332.50

256K Expansion Memory kit\$115.00\$39.95

Hard Disk Add-in (Kaypro 10): Add an additional 10 or 20Mb drive inside your Kaypro 10, or install a single 32 to 56Mb drive. Package Includes hard disk, all cables and mounting hardware. TurboROM included. Can be expanded to include RAM Disk and Real Time Clock.

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Hard Disk Add-in: Add an internal 10 to 56Mb hard disk to any floppy disk based Kaypro computer. Includes hard disk, disk controller, all cables and mounting hardware. TurboROM included.

10Mb System\$1075.95

20Mb System\$1506.95

32Mb System\$1639.95

External Hard Disk Add-on: Add an external enclosure with 10 to 112Mb of hard disk and up to 2Mb of RAM disk to your CP/M Kaypro. Mix and match to meet your requirements. Can be expanded to include RAM disk and Real Time Clock.

External Hard Disk Add-on Prices start at \$1436.95

Chocolate Diskette: the ideal gift for all computer owners who love chocolate! This diskette is 4.8 ounces of delicious milk chocolate in the shape of a 5 1/4" diskette. It comes in a real vinyl case that will hold 3 real diskettes.

Chocolate Diskette\$9.95

Infocom Games: Become part of another world or another time. Challenge your mind with a story that never stops changing, and whose plot turns and twists before your eyes. You become the main character in a interactive story that can continue for weeks or months before you find the ultimate solution.

Infocom Games (CP/M)10% Discount

SOFTWARE UTILITIES

Autodiff: File difference detector. This program finds insertions, deletions, and changes between any two files. Autodiff can mark the file, display, or print the differences, and more!

Autodiff (CP/M)\$29.95

CP/M DateStamper: Automatically stamp your files with the date it is created, last read, or modified. Works without a Real Time Clock, or with the clock in the newer Kaypros or with the Advent Clock/Calendar. Utilities are included to allow copying, erasing, or renaming files based on time and date. A time logging utility is included to record computer usage for business/tax purposes.

DateStamper (CP/M)\$49.00

Format Conversion Software: Your Kaypro can read and write many popular disk formats including MS-DOS, PC-DOS & TRSDOS.

Uniform: up to 80 formats\$69.95

Media Master: up to 75 formats\$39.95

Media Master Plus: Read & write up to 75 formats. Includes ZP/EM program which allows CP/M programs to run on your MS-DOS computer. An \$80 value.

Media Master Plus (MS-DOS)\$59.95

Sidekick: One of the most popular programs ever written. Use Sidekick as a calculator, notepad, appointment calendar, auto dialer, ASCII conversion table and much more. On-line help if you forget any of Sidekick's many functions.

Sidekick (MS-DOS)\$54.95

SmartKey II: New Release! Same great time saver as the original. Makes every software program easier to use. Can reduce keystrokes by more than 50% by redefining any key on your keyboard to be any combination of characters or commands that you desire.

SmartKey II\$49.95

SmartPrint: A powerful add-on to SmartKey, SmartPrint is a versatile writing tool designed to give you full access to your printer's features such as wide, bold, condensed, underlined, subscript, superscript, and more. Works great with programs like WordStar and others.

SmartPrint\$29.95

ZP/EM: Run almost any CP/M program on your IBM or compatible. Can be used with Media Master or Uniform to allow programs on CP/M disk formats to run directly on your MS-DOS computer.

ZP/EM (MS-DOS)\$39.95

PROGRAMMER'S CORNER

C/80 Ver 3.1: Full featured C compiler and runtime library. One of the fastest on the market. Mathpak provides true 32 bit floating point and signed integer data types.

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C/80 MathPak (CP/M)\$29.95

Toolworks C: This compiler is a complete subset of C. The two-pass compiler produces relocatable object files (.obj) which are compatible with the MS-DOS LINK program. Mathpak provides true 32 bit floating point and signed integer data types.

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The KAYPRO 2000

A closer look at the lap-top

by Frederick Hannon

There are at least nine lap-top computers on the market today, and the criteria for judging them are physical appearance, price, portability, performance, and endurance.

Whether you like the 2000's appearance or not depends on your own taste; you be the judge. The price—\$1,995—is more than competitive. And this computer stacks up well against the competition in every other respect.

Portability. Other lap-tops are a little too heavy for comfortable carrying or use on one's lap. Weighing in at 11.5 pounds, the 2000 is light enough to be carried and used anywhere there's work to be done.

Performance. All MS-DOS lap-tops run the same software, but only the Hewlett-Packard, Morrow and Kaypro offer bundled software that responds to the needs of most users. Of these three, only Kaypro throws in a first-rate word processor, a database management package and a spreadsheet.

Endurance. The ruggedness of the 2000 is due in part to Kaypro's decision to use 3.5-inch disk storage. These disks are less susceptible to damage because because of their hard plastic casings. Also, the rubber "bumpers" on the outside edge of the case act as shock absorbers, protecting the computer's appearance and performance.

Adventure: Explore the dangerous Colossal Cave for treasures. Endure mystical spells and overcome adversaries. The only original uncut version.

Adventure\$19.95

Airport: You are an air traffic controller and your radar screen is filled with aircraft under your guidance. See how long you can last without cracking. Tougher than the real thing!

Airport (CP/M)\$19.95

Eliza: The pioneering artificial intelligence program, Eliza is a psychiatrist that carries on a conversation in plain English about anything you wish. Great to play alone or in a group.

Eliza\$24.95

MyChess: This award-winning world class chess program features nine skill levels with over 850 opening moves. Prints moves and saves game in progress.

MyChess\$34.95

Word Wiggle: Scrambled letter game for building vocabulary skills of young and old. Eleven skill levels containing 40,000 word dictionary. Fast paced, fun, and educational.

Word Wiggle\$29.95

COOK'S CORNER

MyDiet: Create your own personal nutritional profile that will help you derive the maximum benefit out of the foods you eat. MyDiet is designed for the professional nutritionist, but is easy to use. Compares to programs costing hundreds of dollars!

MyDiet (MS-DOS)\$49.95

Computer Chef - #1 in the Series: The computerized cookbook for food lovers. Contains a database of almost 100 recipes with space to add your own. Auto scale ingredient quantities, find recipes by key words or type of ingredients you want to use, then display or print your selection.

Computer Chef\$29.95

What's for Dinner - #2 in the Series: 200 main dish and dessert recipes. Requires Computer Chef program (not included).

What's for Dinner\$19.95

The Best of Wok Talk - #3 in the Series: Exotic Chinese cooking. Over 100 recipes from China. Includes Computer Chef program.

The Best of Wok Talk\$29.95

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Basic Office: Time & Billing program designed to automate the special needs of the professional office. Provides personal calendars, client timekeeping, account billing, receivables tracking, Trust & Deposits accounting, and flexible management reports. Three versions are available, each tailored to the specific requirements of Lawyers, Accountants, Professionals.

Basic Office\$299.95

Checks & Balances version 3.6: A complete personal checking program or business register. 3.6 is completely rewritten and includes check writer and data base. It is easy to learn and use with new features including more types of reports. Complete with new 180 page manual. An excellent money manager!

Checks & Balances\$74.95

Grafiks 2.4: High performance business graphics package which produces "best possible" display and prints high resolution graphics on your printer. Produce professional pie, bar and line charts all with shading for added appeal.

Grafiks 2.4 (CP/M)\$125.00 ... \$69.95

Rembrandt Ver. 3.0: The most popular graphics program for the Kaypro computer. Supports most dot matrix printers.

Rembrandt (CP/M)\$79.95

Stardrive: Enhance WordStar by including high resolution graphics, on line 100,000 word spelling checker, thesaurus, and a calculator to do common math, all while inside the edit mode of WordStar.

Stardrive (CP/M)\$199.95 ... \$99.95

WRITER'S WORKSHOP

Punctuation & Style: Improves your writing by catching unbalanced quotes, parentheses and brackets, improper abbreviations, capitalization, sentence structure, much more. It's like having your own copy editor!

Punctuation & Style\$125.00

Thesaurus: This powerful 90,000 word Thesaurus allows you to select the best word for the application. Works inside WordStar for greater ease of use. Instantly searches its dictionary, then displays synonyms, and automatically deletes the "wrong" word and replaces it with the "right" word. Requires 380K disk storage.

Word Finder\$79.95

Wordpatch: Print files with tiny, compressed, wide, or wide compressed type faces, 5 sizes of italic, real superscripts and controls to learn. Supports most popular dot matrix printers. A must for WordStar users!

Wordpatch\$49.95

The Word Plus: The ultimate spelling checker. Not only finds misspelled words but shows you correct spelling options, shows the word in context, builds dictionaries of special words you use and much more.

The Word Plus (MS-DOS)\$150.00

SCHOOL HOUSE

Funzeez: Build fundamental arithmetic and language skills. Provides four different programs to choose from: flashing numbers, arithmetic drills, unscrambling words and word guessing. Grades 2-5.

Funzeez\$34.95

Math Tutors: Improve your skills in basic thru advanced math. Learning thru multiple-choice problems with help and hint functions provided. Grades 8-College.

Algebra\$34.95 Calculus\$34.95

Geometry\$34.95 Trigonometry\$34.95

SAT Score Builder: This program is designed to help students prepare for the Scholastic Aptitude Test required by most colleges and universities. Includes Help function.

SAT Score Builder\$34.95

Reading Professor: Now you can use your computer to boost your reading speed while increasing comprehension and retention! Self-paced lessons show immediate improvement and feedback. Includes several different practice exercises. Developed by skilled educators, this program tracks user's progress and monitors reading rates up to 2500 wpm. Additional reading libraries available.

Reading Professor\$15.95

Typing Tutor: Comprehensive program for use in teaching beginning skills or improving speed and accuracy. Not a simple minded drill, this program teaches you proper finger placement. Basic thru advanced drills using "real world" text examples for both the main keyboard and the numeric keypad.

Keyboard - The Computer Typing Tutorial (CP/M)\$39.95

ACCESSORIES

Printer & Modem Cables: These high quality cables are designed to work between your particular printer or modem and your Kaypro. Specify make and model of printer and Kaypro model when ordering.

RS-232 Serial:	6ft - \$17.95	12ft - \$22.95
Kaypro 16 RS-232 Serial:-	6ft - \$19.95	12ft - \$24.95
Centronics Parallel:	6ft - \$24.95	10ft - \$28.95
Kaypro 16 Parallel:	6ft - \$27.95	10ft - \$31.95
Modem Cable:	2ft - \$19.95	4ft - \$22.95

12ft Keyboard Cable: Replaces the original 4ft cable. Designed to meet the exact requirements of your Kaypro.

12ft Keyboard Cable\$9.95

Anti-Glare Screen: Increases contrast and reduces glare. Attaches directly to the CRT and requires no disassembly. Please specify Smoke or Green when ordering.

Anti-Glare Screen\$19.95

Finger Print "Letter Writer": Add near-letter-quality print, IBM and Apple Graphics printer emulation, plus 16 other print functions to your Epson FX series printer! Replacement ROMs, easy installation does not void printer warranty.

Finger Print "LetterWriter"\$79.95

Keyboard Template: Fits over your keyboard to provide a complete WordStar, Mailmerge and SpellStar reference guide at your finger tips. CP/M computers only.

Keyboard Template\$16.95

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The hardware

About the size of a three-ring notebook (its dimensions are 11.5 inches by 13.1 inches by 2.6 inches), the 2000 will fit in a briefcase or an overnight bag. It comes with a padded nylon carrying case with a detachable shoulder strap and briefcase handle.

The carrying case and the computer itself are both "Kaypro black." The 2000 has a lightweight brushed aluminum casing, with sculpted rubber protection grips and a built-in handle.

One 3.5-inch disk drive comes standard. Because each disk can contain 720K, you have the same disk storage with one drive as two IBM 360K 5.25-inch disks. The decision to use 3.5-inch disks was based largely on technical advantages. The 3.5-disk drives generate less heat, use less power, and take up less

space. The low power requirements of the entire system design allow the 2000 to run all afternoon on the internal battery. A 115v AC adapter/recharger is standard with each 2000.

The CPU is a 4.77 MHz CMOS (low power consumption) equivalent of an 8088, the cornerstone of IBM PC-type system architecture. The 2000 also has a socket for adding an 8087 math coprocessor. An 8087 chip can dramatically reduce the time required for some mathematical operations, provided you have software that supports the math coprocessor.

The 2000 comes with 256K of RAM, with the option of expanding to 768K. The ROM is 16K—less than some other compatibles, but enough to do the job.

The software

Bundled with the 2000 are MS-DOS version 2.11, WordStar version 3.31p, CorrectStar, MailMerge+, StarIndex, PolyWindows, Traveling Expense Manager, MITE, and GW-BASIC. In addition to these Kaypro

standards, you can use virtually any software for the IBM PC.

There are enough MS-DOS computers in the 3.5-inch format on the market that the third-party software houses have responded with an impressive parade of popular programs. The disk format for the Kaypro 2000 is the same as for the Data General One. Software that runs on the Kaypro 2000 includes dBASE II, Lotus' Symphony and 1-2-3, MicroStuf's Crosstalk XVI, and Lifetree's Volkswriter Deluxe. (Even Flight Simulator can be made to run on the 2000, but the slate gray skies on the LCD leave one feeling that aerial outings are best left for color systems.)

Here's looking at you

The 2000's liquid crystal display, 8.9 inches wide and 2.85 inches high, can display as many lines and rows as a full-size CRT monitor, plus 640 x 200 bit map graphics. Unfortunately, there's still much room for improvement. The problem with large LCDs is inherent in the technology.

The problem with large LCDs is inherent in the technology.

Although all large LCDs leave something to be desired, the only alternatives are electroluminescent (EL) and gas-plasma displays. EL and gas-plasma technologies are prohibitively expensive (particularly gas plasma) and require considerably greater power use. All things considered—price-performance ratio, power requirements, and ruggedness—the LCD is the best a lap-top computer user can hope for at present.

Kaypro's full-size LCD (25 lines by 80 columns), like those of all other lap-tops, has problems with glare and limited contrast. Because LCDs are dependent on ambient light, the screen can become nearly unreadable with almost any change in the screen angle or angle of the light source.

Kaypro has alleviated this problem by making the 2000's keyboard detachable. By separating the keyboard from the 2000, you can adjust the angle of the display for optimal viewing without affecting the angle of the keyboard. It's puzzling to me that the flip-top display wasn't engineered to allow variable angle lock, instead of the fixed-angle (120 degrees), but the detachable keyboard solves that problem to an extent.

The keyboard

The keyboard for the 2000 is self-contained and ultra-compact. In fact, the dimensions of the keyboard (12.3 inches wide by 5 inches deep) determine the scale of the entire machine. As long as the QWERTY keyboard remains the industry standard, keyboards will be the main limiting factor in the size of lap-top computers.

The Kaypro 2000 keyboard features 76 *full-size* sculpted keys with excellent tactile response. Every key on the IBM PC is represented on the Kaypro 2000. Ten function keys are in a row across the top of the keyboard. Cursor controls are in an inverted T on the lower right side. The Num-Lock key controls the numeric pad, which resides in the 7-8-9, U-I-O, J-K-L, M and period portion of the central keyboard.

When first using the keyboard, I had some problems because I tend to rest the heels of my palms on the desk and front edge of the keyboard. Piano teachers and typing instructors repeatedly tell their students that one's hands should hang in the air with only the fingertips making contact with the keys. For concert-quality word processing that may be true, but in the mundane workaday world, the hands tend to yield to gravity. Unfortunately, when the hands rest on the front of the 2000 keyboard, the ALT key can be depressed, with mixed-signal results that turn WordStar into a Black Hole.

All in all, the keyboard is good. The coiled cable that connects the keyboard to the 2000 can stretch to approximately five feet, so you have plenty of room to get comfortable. The keyboard can be used within the 2000's casing, or set on a desktop. Flip-down supports are built into the keyboard casing, just as they are on the IBM PC keyboard. Between the keyboard and the LCD are the 3.5-inch disk drive and a diskette storage space that holds two diskettes.

Works well with others

Most competing MS-DOS lap-top computers fall into one of two categories: either they are stand-alone machines, or they are designed to complement desktop microcomputers. The Kaypro 2000 offers full functionality in both capacities. It delivers desktop IBM PC power in a lap-size package, at less than two-thirds the price. With the bundled software, the Kaypro 2000 is a functional, self-contained computer.

The optional base unit (\$795) is an expansion chassis that holds two full-length expansion cards and has room for two half-height 5.25-inch disk drives, or one half-height 5.25 floppy and a half-height hard disk. With the base unit, special-purpose cards can be used with the 2000, and direct conversion from 3.25- to 5.25-inch diskettes is a snap. It also features both serial and parallel ports, freeing you from reliance on the single serial port on the 2000.

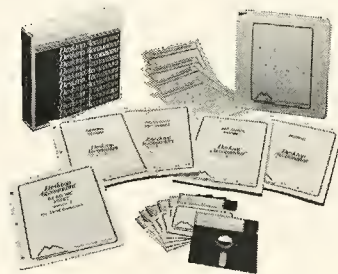
Interfacing the 2000 with the base unit is simple and straightforward. On the bottom of the 2000 is a 5.5-inch hard rubber strip. Slip that protective strip away and you'll see two lines of 50 pins. This 100-pin male-to-female interface seats securely atop the corresponding pin slots on the upper surface of the base unit. No cables are needed.

Similarly, the multi-adapter unit (\$155) allows the 2000 to snap directly into place. With the multi-adapter, you can connect external disk drives and an

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KAYPRO 2000

RGB monitor. The multi-adapter includes a 5.25-inch disk port, a 3.5-inch disk port, a parallel port, and one half-length slot for a video card. Although the multi-adapter will accept any half-length video board, Kaypro recommends using the Persyst II color card.

If you have an IBM PC or compatible, Kaypro offers another option for modem-less transfer of files from the 2000 to the desktop. Kaypro's PC card and cable (\$95) are designed to be plugged into the desktop PC and into the 5.25-inch port on the multi-adapter module. A software switch steers the drive to either computer, allowing you to transfer files between the 2000 and your desktop without needing to buy an additional drive.

*The Kaypro 2000 is
a functional, self-
contained computer.*

Extra drives

If you do want another disk drive, Kaypro offers an ultra-small disk drive (1 x 4.5 x 6 inches) in the 3.5-inch format. This external drive is enclosed in a brushed aluminum black casing, so it matches the 2000. Because this disk drive (priced at \$295) is self-contained, it is as portable as the 2000.

To use the optional 3.25-inch external disk drive, you simply connect the cable that comes with it into the multi-adapter's 3.5-inch port. Like the 2000, this external drive is battery powered.

If you want an external 5.25-inch disk drive, Kaypro offers one for \$295. This 360K IBM-format drive is also enclosed in a matching brushed aluminum case and is fully portable. The 5.25-inch disk drive is designed to fit on your desktop, next to the 2000, but its internal power supply lets you take it anywhere.

The full potential

Although the Kaypro 2000 comes with 256K of RAM, you may want additional memory. At your option, you can have the factory install RAM chips to bring the system up to a total of 768K RAM. You could install the extra memory yourself, but letting the factory handle installation protects your warranty.

With the full 768K (\$195), spreadsheet and disk copying operations are much more convenient. And because the extra memory is internal, you aren't tied to the base unit. MS-DOS cannot use memory above its 640K boundary, but Kaypro includes RAM disk software that can make use of memory above 640K.

If you want to add an internal modem (\$295), Kaypro offers a 1200-baud Hayes-compatible modem. The internal modem snaps into a connector on the main-board and fits completely inside the 2000's casing.

Another Kaypro option is the serial-to-parallel

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Comparing Lap-top Computers

Company	Data General	Grid Systems	Hewlett-Packard	Kaypro	Morrow	Quadram	Sharp	Texas Inst.	Zenith
Product Name	Data General/One	Gridcase 1	HP-110	Kaypro 2000	Pivot II	Datavue 25	PC-5000	Pro-Lite	Z-171 Portable
Price	\$2,995	\$2,975	\$2,995	\$1,995	\$2,995	\$2,195	\$1,995*	\$2,995	\$2,699
Weight (lbs.)	9	12	9	11.5	14.5	14	9.5	10.5	14.4
Operating System	MSDOS, CP/M 86	MSDOS, GridOS	MSDOS	MSDOS	MSDOS	MSDOS	MSDOS	MSDOS	MSDOS
RAM/ROM (min./min.)	128K/64K	128K/512K	272K RAM	256K/16K	256K/32K	128K RAM	128K/192K	256K RAM	256K RAM
Storage Media	3.5	3.5	3.5 (option)	3.5	5.25	5.25	bubble cart.	3.5	5.25
Display Type	LCD	LCD	LCD	LCD	LCD/EL	LCD	LCD	LCD	LCD (backlit)
Display Size	25x80	25x80	16x80	25x80	24x80	25x80	8x80	25x80	25x80
Battery Life (hrs.)	8	4	16	4	3	12	6	6	4
Bundled Software	Tutorial	PCMaster/Slave	Lotus 1-2-3, Memomaker, Personal Applications Manager	WordStar, MailMerge, InfoStar+, CalcStar, GW-BASIC	New Word, Scheduler, Calculator, Clock/Cal., Phone dir., Exec. utilities	Diagnostics	SuperWriter	none	none

(continued on page 58)

Note: LCD = liquid crystal display; EL = electroluminescent. *Note: PC-5000 includes a built-in miniature printer.

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"FINANCE, SBACOUNT, MBACOUNT — each easily installed and running at full power in 20-30 minutes! Each quite effective, inexpensive, efficient — favorably compared to

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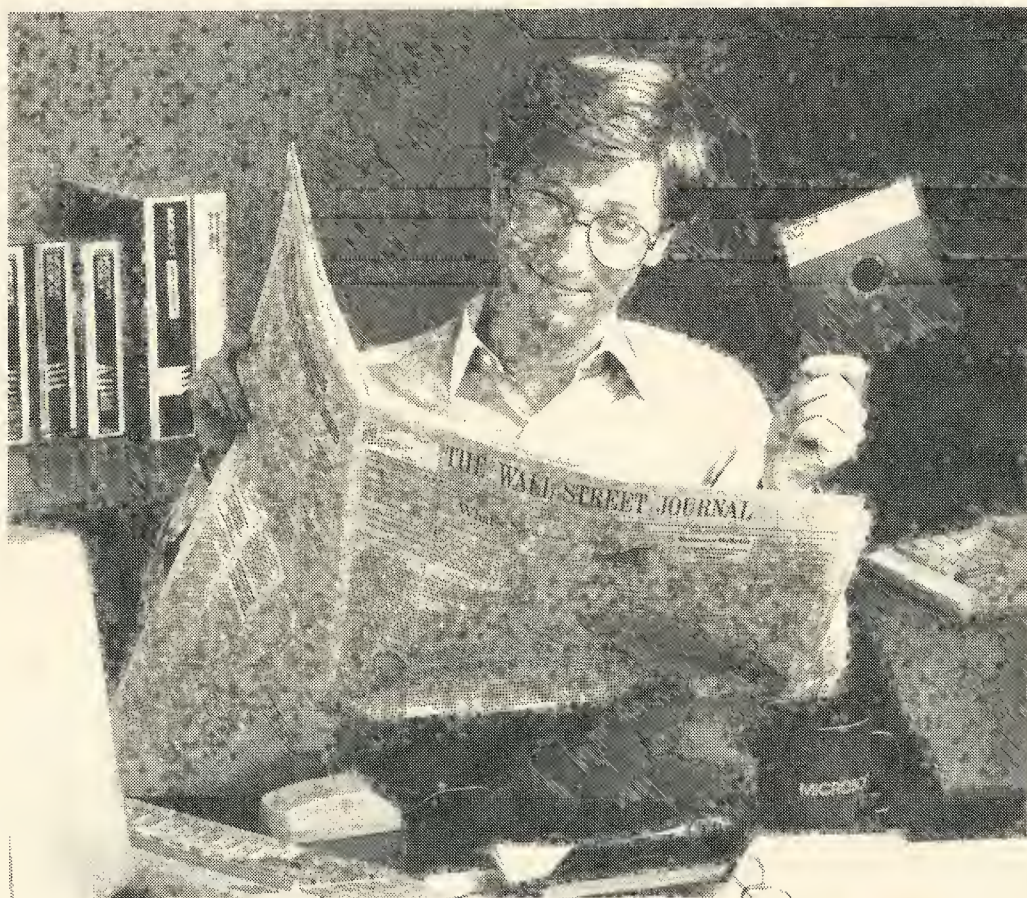
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KAYPRO 2000

(continued from page 55)

printer interface (\$65). This universal interface allows almost every common printer with a standard Centronics parallel configuration to be connected directly to the 2000's serial port.

Power supply

If the 2000's four-hour battery isn't enough for you, you might consider the spare battery pack (\$25). This external pack is small, measuring only 2 x 3.5 x 6 inches. With the external battery pack you'll get another four to eight hours of operation. Like the 2000's internal battery, the spare battery pack can be recharged with the standard AC adapter.

Kaypro even has an optional dual input charger for less than \$50 that operates from either 115v AC or 12v DC. This adapter replaces the adapter/recharger that came with your Kaypro 2000 and plugs into a standard 115v AC wall plug or the cigarette lighter in your car. If you happen to have a car with a 6-volt electrical system you don't need to buy the dual input charger. You simply go down to the nearest Radio Shack and buy a standard cigarette lighter power adapter. The only thing you have to be certain about is that the positive voltage is on the outside of the plug that connects to the back of your 2000, not the inside (they come both ways). This is probably the smartest use yet for a cigarette lighter.

The competition

The Kaypro 2000 isn't the first MS-DOS lap-top; the Data General One claims that distinction. One advantage of not being first is that there are already hundreds of popular software programs that run on the 2000. And since the Kaypro 2000 shares the same 3.5-inch disk format as the Data General One, software for the Kaypro 2000 is already on dealer's shelves.

The accompanying chart summarizes the features of other lap-tops now on the market. Peruse the chart and make your own judgments.

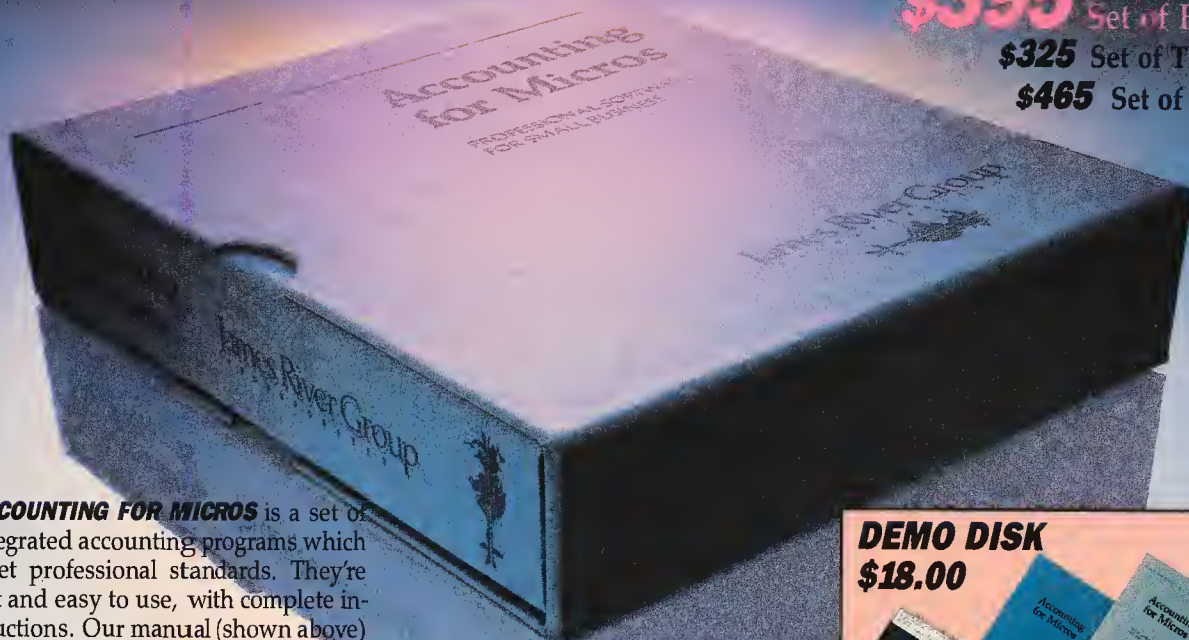
Frederick Hannon is a freelance writer and designer in Encinitas, California. He has written about Kaypro products for other computer publications, such as PC Retailing.



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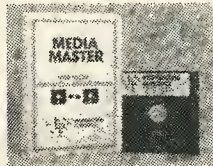
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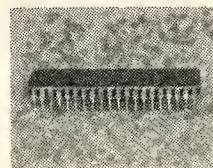
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Z-SYSTEM

(continued from page 47)

• **Modifying the Installation**—Once you've got a manual installation up and running, you'll know enough to alter any part of it, changing features and making it larger or smaller as you wish.

Tools needed

If you're doing a semi-automatic or manual installation, or buying one of the limited versions of the automatic installation, make sure you get all the ZCPR3 documentation and help files. You can now get much of this information (minus help files) in a book—*ZCPR3: The Manual*, by Richard Conn, 351 pages, \$19.95, from Echelon, Inc.

If you're doing a manual installation or modifying any installation, you'll need a macro assembler. Because the basic ZCPR3 source code is written in 8080 assembly language, you can use Digital Research's MAC assembler.

Alternatively, you can get a Z80 code relocating macro assembler (also from Echelon) for \$69—about the same price as MAC. This assembler, ZAS, comes with a linker and librarian, as well as with a program that converts 8080 source code to Z80 source code. ZAS can also produce and use REL files compatible with Microsoft's Macro-80 assembler.

Eventually, Echelon plans to convert all ZCPR3 source code to Z80 code and to issue new source files only in Z80 code. If you don't already have MAC or Macro-80, ZAS is a good investment for the future.

If you're doing a manual or semi-automatic installation, get a copy of the ZCPR3 helper file, Z-HELPR.BBS, a list of people across the country willing to offer assistance with installations on various computers. This list is available on Z-Nodes (CP/M bulletin boards that carry the full ZCPR3 system—see list in last month's article). If you don't have a modem to call one of these boards, make an effort to find someone who does, because both the list and the boards can save you a lot of time when you have questions about ZCPR3.

Finally, make sure you get Echelon's *Z-News*, a newsletter put out every two weeks. It's full of tips, new discoveries, and information about fixes, updates, and new releases. You can either get it free from Z-Node bulletin boards or subscribe for \$24 a year (six months free if you buy \$39 worth of Echelon's products). Subscribers get *Z-News* about 10 days before it appears on the bulletin boards. ■

Where To Get Z-System

All parts of the Z-System, including ZCPR3, are available directly from Echelon, Inc. at 101 First Street, Los Altos, CA 94022; orders: (415) 948-3820.

ZCPR3 and its utilities are also available from public domain sources (though commercial products like Z3-Dot-Com, Z-Com, ZRDOS, etc., are not). See last month's article (page 30) for sample prices and contact phone numbers.

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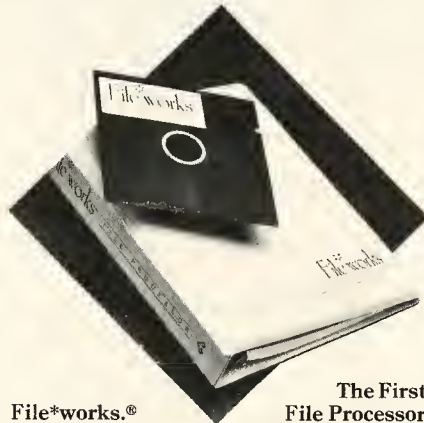
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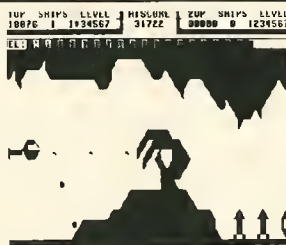
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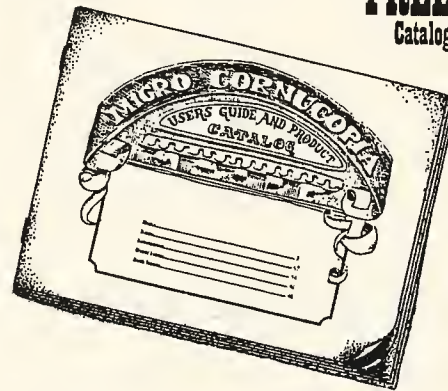
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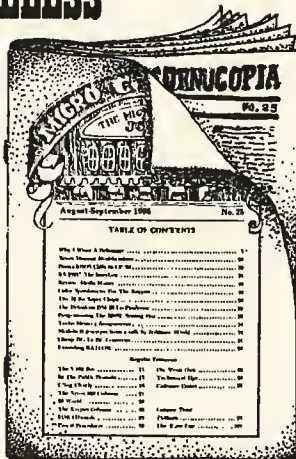
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Little Mysteries

Cold and warm boots: What's the difference?

by David Weinberger

Question: It is possible to set some attributes on the Kaypro. Which of the following are affected by CTRL-C and which are not? Why?

1. Key click turned on or off
2. Numerical keypad definitions
3. List device (i.e., data sent to parallel or serial port)
4. Logged drive

Answer: All of the above will survive a CTRL-C (^C). To understand why, it is necessary to know the difference between a cold boot and a warm boot. And to know that requires understanding of the basic structure of CP/M. Nothing is simple, is it?

If you look at your Kaypro manual's memory map, you will see the parts of the CP/M operating system laid out. At the bottom of memory is CP/M buffer space, which CP/M uses for various housekeeping operations. Then comes a big chunk called the Transient Program Area (TPA). The programs you run, such as WordStar or MBASIC, are loaded into this space.

Then comes the Console Command Processor (CCP), which contains the built-in commands (REN, ERA, USER, DIR, SAVE, TYPE). Next comes the Basic Disk Operating System (BDOS), which contains the general programs that allow you to send and receive information via your disk drives and other devices. Finally there is the Basic Input/Output System (BIOS), which contains the customized programs necessary to get the Kaypro to run.

This organization has some distinct advantages. If you write CP/M assembly language programs, you find that it is very easy to convert them for use in different computers running CP/M, even though these computers may do the nitty-gritty work in different ways. This "portability" is one reason why CP/M has become so widespread.

There is a list of about 36 different operations a programmer is likely to use—print a character on the screen, print a character with a printer, erase a file, find

out the size of a file, find out if anything has been typed on the keyboard recently—that are accomplished by the BDOS.

The programmer does not have to figure out how to get the Kaypro and the Osborne and the Morrow, etc., actually to do these things. The programmer merely has to say "Function #2," for example, and each of these computers will print a character on the screen. (Of course, the programmer has to say "Function 2" in assembly language and then assemble it properly.) So, from the programmer's point of view, CP/M consists of uniform "buttons," which, when pushed, miraculously result in uniform results in diverse machines.

But from the computer designer's point of view, things are different. It is up to the people who design the computer to get their machine to do all the things that CP/M wants done. For example, to erase a file, the computer must move the drive head of the disk drive to the proper spot on the disk. Disks come in various sizes and formats. By itself, CP/M does not know exactly where to move the drive head. That information must be supplied by each computer designer.

So, the BDOS is generally uniform, but it is customized for each machine.

Now, when you first turn on your machine, it has not yet loaded the CP/M operating system. Yet it is that operating system that contains the instructions that tell the computer how to read and load a program from a disk. Since the instructions for loading a program from a disk are themselves on a disk, it would seem the computer is stuck in a closed and empty loop. It needs a way to pull itself up by its own *bootstraps*.

A cold boot does just that. In a chip in the Kaypro is some read-only memory (ROM), which prints a message on the screen asking you to insert a disk and automatically reads the first track of whatever is in drive A. If you have SYSGENed that disk (put a copy of the operating system on the disk using the SYSGEN program), the first track will contain CP/M. Once CP/M is loaded, you can start issuing instructions to read

other tracks. That is, you can type "MBASIC" or "PW" and the computer will know what to do.

During the cold boot, all sections of CP/M are loaded, including, of course, the customized BIOS. That BIOS sets up the Kaypro to have a key click, to have the numeric keypad defined one way or another, to use the parallel or serial port as the standard, and to be logged onto drive A.

It does this by filling in some memory spots right near the beginning of memory (in the CP/M buffer). Through various programs, you can alter those low spots, changing those attributes. But if you were to cold boot, the original, unaltered BIOS would be reloaded, and the new attributes would be wiped out. In order to make them permanent, you need a special program (such as Kaypro's CONFIG), which changes not only the spots in the *memory* of the computer but also the spots on *disk*.

When you warm boot, you are doing something different. When you are in a program you do not need the built-in CP/M programs such as ERA and DIR, so CP/M allows the CCP (which contains those built-in programs) to be written over by programs that need the extra room. A warm boot rereads the CCP from the disk and rewrites it into memory. So, many programs provide a warm boot when you are finished to make sure the CCP is there intact. (Some programs know they have not overwritten the CCP and so return you to the A> without a warm boot.)

The BDOS is rewritten also during a warm boot, but not the BIOS, which is why the four attributes we began with are not affected by a warm boot. (During a warm boot, the computer is sent to the very lowest spot in memory, which tells it to jump high up to get some instructions, bypassing the spots that contain the information about which disk is logged and which printer port you want data sent to.)

I warned you—nothing's simple.



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Tip Trader

This is the initial installment of a new feature in PROFILES. "Tip Trader" is tips and fixes for Kaypro computers and software gleaned from letters submitted by our readers.

WordStar non-patch

In this first installment of "Tip Trader" we need to correct some misinformation that is floating around the Kaypro user community. We have received several letters informing us that patch addresses for MS-DOS WordStar 3.3 are the same as for CP/M WordStar v. 3.0. *This information is wrong! You will crash WordStar if you make patches based on this assumption.*

A few patch points near the front of the MS-DOS version of WordStar are the same as for WordStar 3.0. The farther into MS-DOS WordStar you go, the more addresses diverge from the 3.0 addresses. We repeat, *do not use 3.0 patch addresses on your MS-DOS WordStar.* Mnemonic locations are the same in all WordStar versions; absolute addresses are not.

Non-glare screen

A 7-7/16 by 5-9/16 inch piece of single-strength acrylic plastic makes an inexpensive non-glare screen for your Kaypro.

Install the plastic by carefully sliding it between the screen and the flexible plastic bezel surrounding the screen. This can be done from the front of the computer. Friction will hold the plastic in place. While not as clear as the \$25 units sold by dealers, this is a satisfactory substitute.

This trick will not work on a Kaypro 16 or a Robie. On both of these models the CRT projects farther to the front and less clearance exists between the CRT and the plastic bezel.

Thomas Stanton
Lansing, Michigan

Disappearing underline

The disappearing underline problem referred to in October's "Q & A" is a characteristic of the Kaypro '83 series. When the cursor passes over an underline character it is erased from the screen, but not from memory. The character will return if you simply scroll up or down one entire screenful and then return.

Matthew Chachere
Glen Cove, New York

WordStar headers

Multiple-line page headers can be done in WordStar by assigning a carriage return and a line feed to one of the printer control patches. Assign the string `OD OA` to a patch point such as Phantom Rubout. Then enter your first header line, press `^PG`, and enter the second header line, all before pressing RETURN.

Bert Green
Norfolk, Virginia

Printer/screen toggle

A simple trick to redirect printer or screen output in BASIC or any other language is to alter the IO-BYTE at memory address `0003h`. The following BASIC program illustrates the principle.

```
100 POKE 3,65 ' MAKE LST:=CON:
110 AS="***** OUTPUT LINE *****"
120 LPRINT AS
130 LPRINT STRING$(LEN(AS)*2,"=")
140 INPUT "Scroll screen (Yes = 1)",SC
150 IF SC=1 THEN 120
160 INPUT "Hard copy (Yes = 1)",HC
170 IF HC < > 1 THEN 200
180 POKE 3,129 ' RESTORE IOBYTE
190 GOTO 120
200 POKE 3,129 ' RESTORE IOBYTE
210 END
```

The trick to the whole thing is to reassign your LST: device to the CRT in line 100. This would be for when you want printed output to go to the screen instead of to your printer. In lines 180 and 190 the

IOBYTE is restored to the original value of `LST=LPT`. If you have a serial printer the value in line 100 would be 1 instead of 65.

Paul Muns
Long Beach, California

Date and time in MS-DOS

If your MS-DOS Kaypro is like mine, without a clock, here is an easy way to set the date and time and avoid the clumsy "Date" and "Time" questions that MS-DOS asks whenever you boot. If you use an Autoexec.bat file, the time and date questions are skipped—but you still have to use several steps to set the correct values.

A simpler way is to create a special batch file, like this:

Date 2-%1-86

Time %2:%3

The example here would be for February 1986, so I would name it "Feb.bat"—yes, you will have to edit it on the first day of every month, but naming it for its month reminds you.

To set the clock on February 10, 1986, at 9:15 a.m., you would just enter the command below:

Feb 10 9 15 <CR>

with spaces between parameters instead of those bothersome hyphens and colons.

If you don't presently use an autoexec.bat file, you will need to make one, but it can contain just a remark, such as "Rem—Don't forget to set the date and time."

Joe Cobb
Washington, D.C.

A Perfect Calc template

I was delighted to see Rose Green's article describing her adventures with Perfect Calc ("Bookkeeping With Perfect Calc," November 1985). For Rose Green and for many other Perfect Calc users who may have overlooked one of the features built into that program, may I offer a tip that will save many hours

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MARVEL PRINT

Version 2.1 now offers *Total Printer Control*
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of deletions from already-filled programs?

Design your data files with all the necessary cells (boxes?), including the various formulas needed to make the required cells interact with one another, but leave all the cells empty of data.

Once you have the design stage completed, save that file *without* entering data into it. This will become your master "template," to be used whenever you need a "new" file to record your data in.

Whenever you find it necessary to use the "template" for getting a new file started, call it up by whatever name you saved it under, enter the data required at that moment, then "save" that newly created file under some other filename by using Calc's ^X, ^W sequence, then renaming the "new" file when asked for the name to be used by Perfect Calc.

This leaves the original "template" unchanged on the disk, gets your new file opened and whatever pieces of information entered, then saves it under a different name, which will also satisfy Perfect Calc's sense of duty, as the program will not ask if you want to "abandon modified buffers" when you are ready to exit the program.

Bob Wallace
Daly City, California

Elite type

I compliment Silveira on "WordStar Deluxe." I have one suggestion for those with elite, or any 12 characters per inch, printwheels.

For page formatting, change INI-TPF+18h (address 0369, default 08). The 08 represents characters, so change it to 11h (17), which then has the first elite character in the 17th position. With 70 spaces across that gives 16 spaces on each side of the type—a very pretty page.

Patti Cearley
Woodland, Washington

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Here are more character set examples created and printed with **MARVEL PRINT**:

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Beginner's Luck

by Tyler Sperry

Last month we covered the fundamentals of the CP/M operating system—what it is, what it does, how it works, and the basic commands. This month we'll do the same with MS-DOS for novice users of the Kaypro 16, 16-2, 286i, 2000 or Kaypro PC and for those changing from CP/M to MS-DOS machines.

Our goal is to give you the basic information you need to use your Kaypro. Occasionally, we will refer you to the manuals that came with your computer. We'll try to arm you with enough information to make that task easier. Once you've got the basics, you may discover a whole new world of meaning in the manuals.

The executive secretary

In last month's column, we compared CP/M to an executive secretary. The same analogy applies to MS-DOS. Just as the boss gives orders to the secretary, you give orders to your computer's operating system. It's up to your "secretary" to manage the details of finding the information that you've asked for and putting it away when you're finished.

Your responsibility is to give DOS, your secretary, orders that it can understand. It doesn't do any good to give orders in a language your secretary doesn't speak. DOS, simple-minded thing that it is, only understands one type of sentence—the command.

Communicating with DOS

Giving commands to DOS is pretty easy: you type a command (either a keyword or the name of a program) along with whatever extra information the computer will need to complete the command. DOS lets you know when it's ready to accept a command by displaying a prompt like this: **A>**.

The greater-than mark is the DOS prompt. The letter "A" indicates which drive DOS is currently using. The disk drives are labeled

sequentially: A, B, C . . . (Usually, a hard disk is assigned as C, so hard disk owners are greeted by **C>**.)

Once you have the prompt, you type in the desired command. (Correct any mistakes with the backspace key or the left-arrow key.) Once you've typed everything you need for the command, you start things by pressing the Enter key. For example, you could type **A>DIR**, which would give you a list—a DIRectory—of the files and programs on the disk in drive A.

When DOS first gets a command from the keyboard, it examines the first word to see if it's an internal command (a small program built into DOS). DIR is one example; you'll encounter a few more before we're through.

All this talk of program names has brought up an important point: while the number of commands listed in the DOS manual can be intimidating, *most of your work will require only a half-dozen commands*. There's no sense in being intimidated by something you'll never have to deal with.

The internal commands

You've already met the most popular internal DOS command, DIR. If you don't want the entire directory list and just want to check on a particular file, simply add that file's name after the command. For example, to see if the disk formatting program is available you'd type **A>DIR FORMAT.COM** and DOS would respond with either some

*DOS's method puts
commands together
in the same order in
which people think.*

If the command you've typed isn't one of the internal commands, DOS will look on the current disk (remember those drive letters in the prompt?) to see if it can find a program with that name. If it can, it will start that program running. If not, it will give you an "Illegal command" error message and wait for another command.

As you might have guessed by now, you run any command or program with the same sequence of steps. All you need is the DOS prompt, a disk containing the program (if it isn't an internal DOS command), and the name of the program. Figuring out all of the contractions and acronyms of program names can be the trickiest part. Most of us could guess that WS stands for WordStar, or that DISKCOPY is the name of a program that copies floppy disks, but who but a programmer would divine the meaning of "DIR?"

information about FORMAT or the clever reply, "0 files found."

To copy files from one place to another, you would use the COPY program. If, say, you wanted to move the FORMAT program over to the diskette in drive B, you'd enter **A>COPY FORMAT.COM B:**.

Notice the pattern developing here. You give the command name, the source file, and then the destination. The syntax—how commands are put together—is more "natural" with DOS commands than it is with CP/M commands. (With CP/M you would have to type the command, the destination, and *then* the source. DOS's method puts commands together in the same order in which people think, not some arbitrary order that's easier for the computer to understand.)

By the way, the COPY program allows you to copy several files at once. For example, if your corre-

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spondence files all have the last name .LTR, you could copy all the letters from drive B to drive A like this: A>COPY B:*.LTR A:.

In the command above, the "B:" tells COPY to use files on the diskette in drive B. The "*.LTR" tells COPY that you only want files with LTR as a last name. (The asterisk is known as a "wildcard;" it means any name will do.)

As a more advanced operating system than CP/M, MS-DOS gives you two (count 'em) internal commands for removing files from a disk: ERASE and DELete. Actually, both commands run the same internal program. DOS has been set up to recognize both names. To continue with the wildcard trick from above, you could zap all the files on your disk by typing A>DEL *.*. This is such a potentially lethal combination of wildcards that DOS will verify the command with the reply "Are you sure?"

Most other commands aren't nearly so dangerous. The next one simply lets you display the contents of a text file onscreen. If, say, you wanted to check the contents of a letter to Rick without bothering with WordStar, you could enter A>TYPE B:RICK.LTR.

By now you're probably used to the idea of using letters and a colon to indicate which drive MS-DOS should use. If you want to deal with a lot of files from drive B, you change the current drive by typing just a letter and colon. For example, these two commands:

A>B:<Enter>

B>TYPE RICK.LTR

have exactly the same effect as the previous command, causing your letter to Rick to scroll right past you on the screen.

(You can temporarily freeze things by holding down the "CTRL" key and pressing "s." This stops the display cold. To start scrolling again, just press any other key.)

If your letter to Rick was a form letter and you wanted to change the name of the file, you could RENAME



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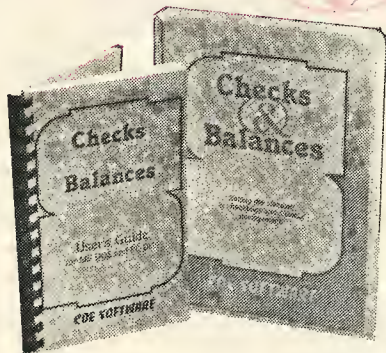


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Beginner's Luck

that file just by typing B>REN RICK.LTR FORM.LTR.

This is much simpler than the way CP/M handles the same situation. You simply tell DOS the current filename and then the new filename.

And that's it for the basic internal commands. There is one last internal feature of DOS you'll probably want to check on, and that's something called subdirectories. DOS allows you to group files together under a common name, and treat them as a collection for certain commands. Tom Enright has detailed the use of subdirectories in his "Technical Forum" columns (October, November and December 1985 issues).

External commands

External DOS commands are all stand-alone programs that exist on disk. DOS's external commands differ from application programs such as WordStar in that they are normally used for housekeeping ("utility") functions. That is to say that external commands are for managing your disk files rather than for creating programs or writing the "great American novel."

A short digression about program and filenames: Anything stored upon disks will have two names. In Technoid—which we must, alas, all learn to speak—the two names are called the filename and the extension. To keep things simple, we'll refer to them by the unTechnoid terms "first name" and "last name." Programs are notable by the fact that their last names are all COM, EXE, or BAT. (These stand for "COMmand," "EXEcutable file" and "BATch file.") All filenames are allowed up to eight characters for a first name and up to three for the last name. End of digression.

Perhaps the most useful of DOS's external commands is FORMAT. FORMAT is one of those commands you'll use often. Formatting a diskette—actually preparing a disk to

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Beginner's Luck

hold files—is something that must be done to a diskette before you can use it for anything. Barring misfortune, you'll only have to do it once per diskette.

Assuming that you want to format a diskette in drive B, you would type **FORMAT B: /S**. This version of the command has three parts. The first part, "FORMAT," tells DOS that you want to format a diskette. The second part, "B:," is which drive will have the diskette to be formatted. And the last part, "/S," is an option of the FORMAT program that says to initialize the system tracks and copy **COMMAND.COM** to that diskette. (You don't really have to understand what all that last part means.)

DISKCOPY is another useful program. It copies *everything* on one diskette to another. For example, **A>DISKCOPY A: B:**, copies the

have one. It's a complex enough subject to fill several books. Which leads us to . . .

Suggested reading

If there is one aspect of the DOS manual that is particularly poor, it is the use of color and illustrations. There aren't any to speak of. An involved topic can be made much clearer with a simple illustration and the use of color.

For that reason alone I recommend you check out two books on MS-DOS the next time you're in the bookstore. These are *DOS Primer for the IBM PC & XT*, by Mitchell Waite, John Angermeyer, and Mark Noble, and the *MS-DOS Bible*, by Steven Simrin.

Both these books are easier to use than others written about DOS, simply because they utilize a second color to make the illustrations

DISKCOPY is most often used to make working copies of your software.

information on the diskette in drive A to the diskette in drive B. This program is most often used to make working copies of your software. The slight but definite chance of random glitch and catastrophe makes using your master disks for everyday operation a definite no-no. **DISKCOPY** is even smart enough to check whether the destination disk has been formatted. If it hasn't, **DISKCOPY** will format the destination disk and then copy all the files from the source disk.

The subject of DOS external commands is far too complex to deal with in one article. Other DOS external commands will search a file for a string of characters that you type in, compare files or entire diskettes, print text files on your printer while you edit another file, and back up your hard disk if you

clear. Of course, both of them are well-written, too, but the graphic design makes these books superior to others written just as well. Fair warning—the Simrin book covers some fairly advanced topics toward the end, but they can all be safely ignored by beginners. ■

Tyler Sperry is a freelance writer and former Editor of PROFILES. He has a great deal of experience with the hardware and software aspects of Kaypro computers. Mr. Sperry was a member of the engineering team responsible for producing the first Kaypro II (then called the KayComp) in 1982.

Product Spotlight

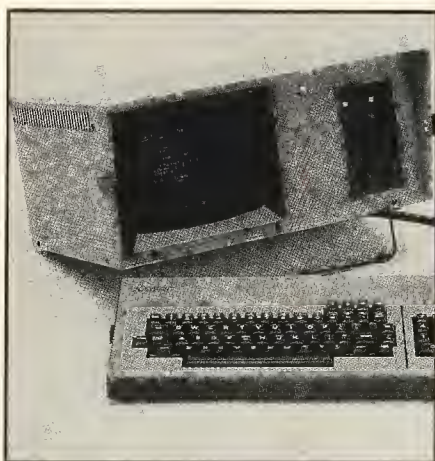
by Tom Enright

Kaypro has made quite a few changes in its product line in the past year. These changes have created some confusion among Kaypro owners about which model has what features. In this column we'll recap the current line of Kaypro computers.

CP/M Kaypros

The 8-bit product line has been reduced to four models: the Kaypro 1, Kaypro 2X, Kaypro 10, and the Kaypro Robie.

All Kaypro CP/M machines are based on a 4 MHz Z80A processor with 64K of memory. Each CP/M Kaypro also has two RS-232C serial ports and one Centronics parallel printer port.



The Kaypro 1

The Kaypro 1 is a "bare bones" CP/M machine and is the most economical model in the Kaypro line. It comes with two 392K double-sided drives but does not have a real-time clock or internal modem.

In keeping with its "bare bones" approach, software bundled with the Kaypro 1 is minimal. Included with this entry-level Kaypro are Perfect Writer and CP/M 2.2 with the standard Kaypro utilities.

In addition to the basic Kaypro 1, a "Kaypro 1 word processing system" is being offered for a limited time. This system is a Kaypro 1 combined with a Gemini dot-

matrix printer and is being offered for the same price as the standard Kaypro 1.

The Kaypro 2X

The Kaypro 2X is a combination of the Kaypro 2 and 4. It comes with two 392K drives, a real-time clock, and a 300-baud internal modem.

When the consolidated model line was being planned, Kaypro felt that the Kaypro 2 name was better recognized than Kaypro 4, so the Kaypro 2 designation was kept and applied to the Kaypro 4.

The software that comes with the 2X includes WordStar, The Word Plus, Microsoft BASIC-80, C-BASIC, S-BASIC, InfoStar, CalcStar, Mite, MicroPlan, and the CP/M 2.2 operating system.

In addition to the standard Kaypro 2X, the Kaypro "Business Pak" consists of the Kaypro 2X plus a letter-quality printer from NEC. The Juki 6100 is no longer Kaypro's official letter-quality printer. It's been replaced by the NEC ELF.

The Kaypro 10

There are no changes here. The Kaypro 10 still has a 10-megabyte Winchester hard disk, one 392K floppy drive, an internal 300-baud modem, and a real-time clock.

The software package for the Kaypro 10 is the same as for the Robie, plus software for backing up your hard disk onto floppy disks.



The Kaypro Robie

The Robie has two 2.6-megabyte

floppy drives for a total of 5.2 MB of disk storage. In addition, this computer has a real-time clock and an internal 300-baud modem.

Software included with the Robie is the same as for the 2X, plus Kaypro's Master Menu program. MasMenu is a menu-driven front end for CP/M that lets you operate the computer without regard to what programs are in which user areas. MasMenu already knows what is in each user area, so all you need to do is select a program from the menu on your screen.



MS-DOS Kaypros

Kaypro's 16-bit product line is growing more diverse all the time. The basic models, in addition to the Kaypro PC, which we covered last month, are the Kaypro 16E family, the Kaypro 286i family, and the Kaypro 2000.

The Kaypro 16E family is a series of transportable IBM PC work-alikes based on a 4.77 MHz 8088 processor. They are available in two versions, each with three levels of memory expansion. The Kaypro 16/2E comes with two 360K floppy drives and an AT-like keyboard, while the Kaypro 16E has a 10-megabyte hard disk, one 360K floppy drive and the standard K16 keyboard.

A standard K16 system has 256K of memory and can be purchased
(continued on page 93)

New Products

New product listings are not reviews and should not be regarded as endorsements of products we've evaluated.

Press releases and product information for this column should be sent to: New Products editor, c/o PROFILES Magazine, 533 Stevens Avenue, Solana Beach, CA 92075. Releases must include prices and must list the Kaypro models on which the products can be used. Send black-and-white photos if available.

Print upgrade

Bradford 1.20 is a computer program that enhances the print quality of several dot matrix printers to near-letter quality (NLQ). These include Epson MX, RX and FX printers; Gemini 10-X and Gemini 15-X printers from Star Micronics; and the IBM dot-matrix printers.

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\$39.95. All Kaypro computers. Concom Enterprises, 2626 West Touhy Avenue, Chicago, IL 60645. No phone number available.

MicroPro help

A newsletter published by the MicroPro users' group of America, *OmniStar*, is available for anyone who needs help with MicroPro products.

The newsletter covers all MicroPro products. Regular columns include "Inside WordStar," by Vincent Alfieri, author of *Mastering WordStar*, and "Inside InfoStar," by Alan Zenreich, an InfoStar consultant. Regular articles include tips and patches for MicroPro products.

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The TaxCalc Corporate Tax Planner helps corporations maximize their tax savings through efficient "what-if" tax planning analysis. Versions are available for federal corporate returns and California returns.

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\$150. Kaypro 16, 286i, and 2000. TaxCalc Software, Inc., 4210 West Vickery Blvd., Fort Worth, TX 76107, (817) 738-3122.

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DOS middleman

1 dir (pronounced “wonder”) acts as a “middleman” that insulates users from the complexities of DOS commands and syntax, manages the details of handling computer files, helps users create an almost unlimited quick-access menu system, and more. The program is ideal for computer novices who may be intimidated by DOS operations. Experienced users will appreciate its shortcuts.



The displayed list of files in the current directory can be sorted by name, extension, size or date; users can choose whether or not to display hidden files or file creation date. The screen display also offers a menu of available commands and shows both disk and system memory usage, date, time, and more.

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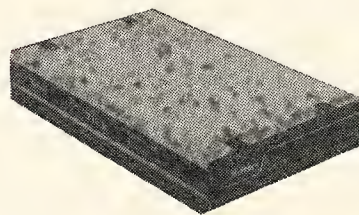
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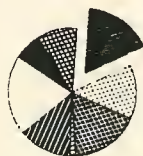
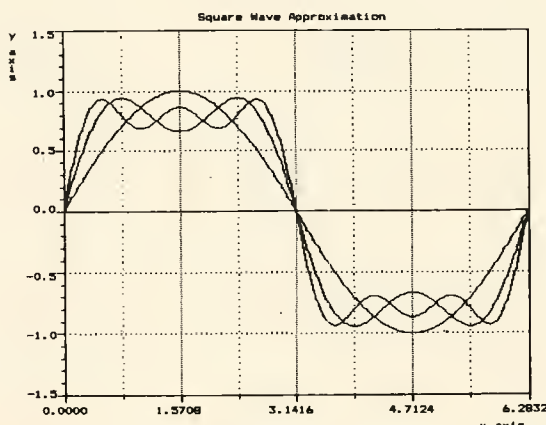
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New Products

The computer's up-down cursor-control keys point to files on the scrollable directory list, and left-right keys point to functions. Some functions (execute, copy, type and erase) work on the indicted file, others independently of it. Function keys can also "point" to a command or menu selection. From there, a single keystroke begins a selected operation.

\$95. Kaypro 16, 286i, and 2000. Bourbaki, Inc., 615 West Hays St., P.O. Box 2867, Boise, ID 83701, (208) 342-5849.

Computer freedom

Prnspool frees up your computer while output is being printed. This software package is implemented as a device driver to provide additional flexibility and features.

Since Prnspool is installed as a device driver, any program can send its output directly to the print spooler without writing it to disk first as required with the DOS PRINT command. This means output from programs can be spooled directly without ever exiting.

Prnspool can support multiple printers on a single computer system, allowing simultaneous and independent spooling for every device. It also provides complete spooling control from the DOS command level. Control functions include pausing and resuming printing, clearing the spooling buffer, and examining the status of the spooler.

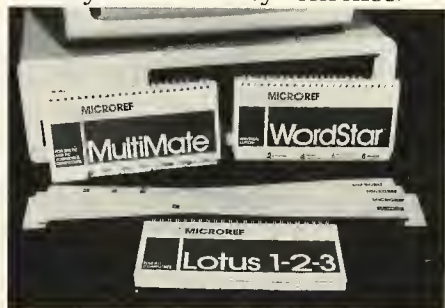
\$39.95. Kaypro 16, 286i, and 2000. Generic Computer Products, Inc., P.O. Box 790, Marquette, MI 49855, (906) 249-9801.

Quick reference

Microref has added a new line of software quick reference keyboard templates to its previous line of quick reference guides. The templates are printed on 18-inch plastic sheets that can be written on and washed and are packaged with reference guides.

The templates include simple

and advanced procedures and key-strokes arranged in logical sections. Templates can be stacked on the keyboard for easy reference.



Microref quick reference guides are available for Lotus 1-2-3, MultiMate, WordStar, MultiPlan, SuperCalc, and VisiCalc. The guides contain index tabs, a built-in easel, illustrations, a glossary and index, and complete step-by-step procedures for all beginning and advanced commands.

\$19.95. Educational Systems, Inc., 1000 Skokie Blvd., Wilmette, IL 60091, (312) 256-4750.

Baud talk

The new line of FasTalk modems are Hayes-compatible-plus, meaning they are fully compatible with the Hayes standard modem and also offer a host of features not found in Hayes modems.

FasTalk modems feature such fully automatic features as dialing, selection of pulse or tone dialing, answering, and baud rate selection.

The communications package SignOn is bundled with each modem. A "learn" mode allows the package to be "taught" to perform log-on sequences, retrieve information, and sign off.

An auto-start feature lets the user set a session time and date for automatic, unattended operation. SignOn uses function keys to issue most modem commands. An on-screen menu identifies the key associated with each function.

\$345 for 300 baud; \$545 for 1200 baud. Kaypro 16, 286i, and 2000. Universal Data Systems, 5000 Bradford Dr., Huntsville, AL 35805, (205) 837-8100.

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Technical Forum

by Tom Enright

The magazine gets a lot of mail from readers asking for technical help. We try to select representative letters as subject matter for "Q & A" and "Technical Forum."

We can only select a few of these letters to print. Unfortunately many letters aren't usable because we can't identify the problem from the information provided. The intent of this month's column is to tell you how to write a letter we can answer.

Your letter has a better chance of being used in one of the columns if we know exactly which Kaypro you have and your problem is described completely. The basic information to include is the model of computer (II, 2'84, 2X, etc.) and, if you have a CP/M machine, which version of CP/M you have.

We can only tell precisely which Kaypro you have from the CP/M version number. Most Kaypro models have gone through several "incarnations" using the same, or a similar, model number. We can't always take time to contact the writer directly for clarification.

Hardware problems

When you need help isolating a hardware problem, we need to know the repair history of your machine. Has your computer shown a similar problem before? When was the last time the drives were aligned or cleaned? (In many cases, dirty or misaligned drives may be the cause of your problem.)

If the problem only occurs after you've been working for a couple of hours, tell us. Heat-related problems usually show up after a couple of hours of use or only during the hottest part of the day. The approximate temperature of the room you're working in can help us to figure out what is happening inside your Kaypro. The more you tell us, the more we can help.

Printers can cause an unbelievable amount of frustration. They

are also one of the most difficult pieces of equipment to troubleshoot by mail. If your printer emulates (imitates) the command set of another printer, or a subset of some other printer's commands, let us know. Many printers that emulate another printer's command set don't emulate the *complete* command set, and for some reason, many printer manufacturers are loath to reveal this information. They'll usually tell you what commands their printer responds to, but not whether their command set is based on someone else's.

Most printer manuals have a page in the back that summarizes the commands that printer recognizes. Make a photocopy of that page to include with your letter. If we can build up a reference library of printer command sets, we can be of more help to more readers. We can't guarantee we'll be able to solve all printer problems, but we'll give it our best try.

When it comes to WordStar patches we absolutely must know what patches you've installed and where you installed them. Without that information we're just groping in the dark. Since most WordStar patches deal with printers, tell us which printer you have. If possible, include a photocopy of your printer's command set.

We normally answer questions on software when several letters relate a similar problem. Questions about third-party software (programs that didn't come with your Kaypro) are next in priority after questions on the bundled software. We feel that our first obligation is to help our readers with the system as it was purchased from Kaypro Corporation.

Other sources of help

Due to the limited space available in the magazine and the lead time before material gets into print, readers need other sources of help.

*It's better to
include too much
information than
not enough.*

If you've added enhancements to your Kaypro, say so in your letter, especially if you have added more than one third-party board or modification. Not all add-on items are compatible with each other. The extra electrical draw, heat, or some other characteristic can have a major effect on your machine's performance. This becomes even more important if you have an MS-DOS computer.

Software difficulties

The key to getting help is to include enough information about your software. It's much better to include too much information than not enough.

Your dealer, local KUGs, and Kaypro Technical Support are the sources suggested most often.

Your dealer is the ideal person to handle support questions and technical problems. The trick is to find a dealer you can rely on—not all dealers want to provide after-the-sale support—and whose information you trust. Try compiling a list of questions you already have the answers for and ask several dealers to give you their answers. You'll find out pretty quickly which dealers know what they are talking about.

The next step on the ladder is a local KUG (Kaypro Users' Group). KUGs are made up of people just like you—Kaypro owners. If they

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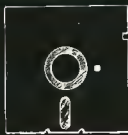
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Technical Forum

haven't already had the problem you've encountered, they may know someone who has. Drawing on their experiences can be unusually profitable. To find a KUG in your area, check with your dealer or call Kaypro's KUG manager at (619) 481-4368.

Your next alternative is Kaypro Technical Support (located at the Solana Beach plant, 481-3920). They may be hard to contact, but they *are* there. These people handle an unbelievable number of calls each day. The main thing to keep in mind is that they have to handle dealer calls before yours, and that this policy was established by Kaypro's management, not the people in technical support.

CompuServe

Let's suppose a worst-case situation. You live 50 miles from the nearest dealer, there is no users' group in your area, and Kaypro Technical Support is absolutely unreachable. What do you do? There is one more source of help—the Kaypro SIG (Special Interest Group) on CompuServe. This is one of the most active sources of information on Kaypro computers outside Solana Beach.

For someone who is having trouble getting good technical help and software tips, this SIG is invaluable. The sysops are knowledgeable

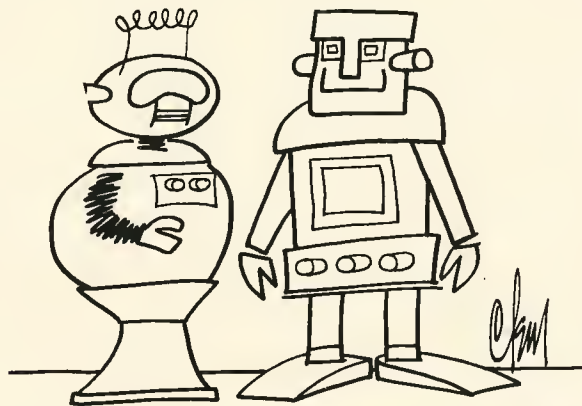
and very helpful. Even if you have a helpful dealer and a good local KUG, the Kaypro SIG is a goldmine of good, accurate information.

CompuServe SIGs have message areas where tips and advice are traded. Just state your question—the answers will come from other SIG members. Even if they can't solve your problem outright, you'll get leads that'll point you in the right direction.

SIGs also have several "data libraries." These are full of programs and text files for you to download. Each data library is devoted to a particular area of interest to SIG members. The Kaypro SIG has libraries on free software, Perfect software, Star (MicroPro) software, communications programs, and several other subjects.

Other SIGs on CompuServe of interest to Kaypro owners are the CP/M SIG, Borland SIG, and two IBM PC SIGs.

Access to the Kaypro SIG is open to anyone with a CompuServe membership. From CompuServe's main menu you can go directly to the Kaypro SIG by typing **GO KAYPRO**. You can pick up a CompuServe membership kit at many computer dealerships, or even at bookstores like B. Dalton. If you're not already a CompuServe member, consider signing up soon. ■



"Do you think artificial intelligence exists on other planets?"

by Dick Lutz

Let it first be said that you don't really need books on MS-DOS. Microsoft's disk operating system is basic, bread-and-butter stuff, and it's likely you can tease what you need out of the manual(s) and save your money for something really necessary.

Having said this (sorry, authors and publishers), I'll add that if you're making a transition from CP/M, you should find MS-DOS easy to learn as you need its various features, a step at a time. I'll qualify that this much: If you're adapting to a hard disk, which is where differences between CP/M and MS-DOS become really important, you probably ought to read the manual sections on PATH, MKDIR (make new subdirectory), CHDIR (change active directory), BACKUP and RESTORE early on.

Then, if some experimentation with your system (before you commit sole copies of important files to the fixed disk) doesn't reveal what you need to know, consider buying a book on MS-DOS.

Further, most manuals are rather incomplete and obscure on creative ways to use BATCh files (like CP/M's SUBMIT, but more powerful). If you suspect automating start-up and other MS-DOS operations might be useful, and you can't get what you need from the manual, that's another cause for considering an MS-DOS primer.

Finally, if you have much trouble making full sense of "pipes" and "filters," one of these books might bail you out.

It's when you get beyond the basics that a book might be helpful. With this in mind, I've focused my consideration of MS-DOS books on hard disks, BATCh files, and other elements most likely to be sticking points in putting MS-DOS to work. Out of about a dozen I skimmed, I selected three for more thorough review:

Hands-On Guide to PC and MS DOS, by Alan Hoenig. \$15.95, Little, Brown and Company, Boston.

221 pages. Generally, I liked its straightforward organization, but I found some specifics a little dense. There are few diagrams.

PC-DOS: Introduction to High-Performance Computing, by Peter Norton. \$17.95, Brady/Prentice-Hall. 324 pages. It's the most novice-oriented of the three books. Some of its plan of organization appeared whimsical. Illustrations consist largely of cute cartoons that occasionally amuse but seldom contribute to understanding.

PC-DOS and MS-DOS: A Guide for Beginning and Advanced Users, by Thomas Sheldon. \$18.95, McGraw-Hill. 374 pages. It has a tutorial and seems to contain more information than the others by a respectable margin. It contains well-conceived diagrams that are rarely hard to sync with the text they illustrate.

Hereafter, I'll refer to the books by the authors' names.

Batch operations

Too many of the books I skimmed presented examples of BATCh files with a comment something like, "Of course, this example does absolutely nothing useful, but it does

ject in a larger context, building from relatively simple explanations to fairly difficult examples. This means we get a six-page introduction to the concept in chapter 8, just in time to put the information to work in chapter 9.

Further on, another 19 pages ease us into more complex usage, including looping and other uses of FOR, IF and GOTO. Finally, another ten pages provide some specific, useful examples—log-on and password routines, an archiving program, and a procedure for mail exchange on a system used by more than one person. Sprinkled all throughout the book, in fact, are more than 30 examples of BATCh files—useful both as-is and as reading for ideas.

Norton is too apologetic at times, warning us that "some of the examples are a bit complicated" and then treating them as though they're intimidating. For the most part, they aren't, and they go into a good deal less detail in 24 pages than Sheldon's treatment.

Hoenig covers the use of BATCh files in just 18 pages, with considerable white space around examples. While the essentials are there and

Too many books present examples with comments like, "Of course, this does nothing useful."

illustrate the operation of" Because BATCh files are so very useful, there's little excuse for this; examples can be devised that teach as well as inspire by example.

I liked Sheldon's approach to this subject best, even though pieces of it must be ferreted out of five separate chapters. This can be forgiven for two reasons: BATCh files are useful in a variety of ways that interlock with other subjects, and Sheldon has taken a building-block approach that deals with each sub-

the writing generates reader understanding of the "how," the lack of solid examples gives short shrift to the "why."

Pipes and filters

MS-DOS allows the output of a command like DIR to be piped through a filter (SORT, for example) and/or redirected to a file or output device other than the screen; similarly, a program or command can take input from a file. To a first-time micro user, the benefits may not be

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immediately apparent, and some prompting by these books might help beginners make good use of pipes, filters, and input/output redirection.

All three books provide adequate coverage. The Norton book does it at a more elementary level, dealing with pipes and filters in the same chapter that elaborates on paths, and again warning of complexity and general scariness. Hoenig does a good job of covering the various option switches. Sheldon again provides the most extensive examples, though covering the subject in only 11 pages.

Hard disk territory

Norton's book appears intended for the user not yet advanced enough to be using a hard disk, though there is some discussion of the PATH and subdirectory facilities necessary to manage the greater capacity involved.

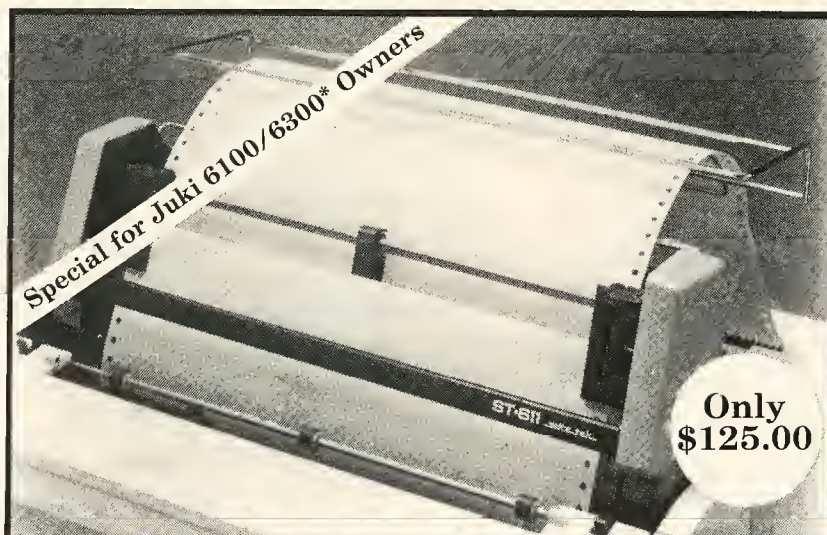
Hoenig provides a clear description of a directory tree and some reasonable examples of subdirectory organization; a minor flaw is an inconsistency between tree diagrams (which are tree-like rather than roots-like) and the "above" and "below" references. His treatment of BACKUP and RESTORE is thorough.

Sheldon's is the book to buy if your primary interest is in getting a good start with a fixed disk. Four full chapters (about 40 pages), plus sections of others, deal with various facets of the subject, including some 20 pages in a richly diagrammed chapter on hierarchical filing systems.

Buying

Of these three works, my bias is for Sheldon, on the grounds that you'll quickly get almost all you can out of the simpler books; I think a really good book should be rich enough in content that you'll keep it handy as a reference book and will learn more each time you take it off the shelf.

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Future Issues

- **Assembly language tutorial:** Beginners will be offered an explanation of how assembly language works, plus an introductory program for rescuing files.
- **Using MailMerge with a database:** How to team MailMerge with DataStar or dBASE II to produce form letters, plus tips on sorting with SuperSort and FormSort.
- **CP/M graphics packages:** Drawing? On a Kaypro? Yes. If you have a Kaypro with a graphics screen, you can draw, do graphs and charts, design a logo and more by using graphics software.
- **Bibliographic software:** In part 1, specialized bibliographic database management programs for students, professors and researchers are discussed; in part 2, we'll look at free-form filers that give you easy access to data without your having to enter it in limited "fields."

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G. Total	101,438	87,480

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